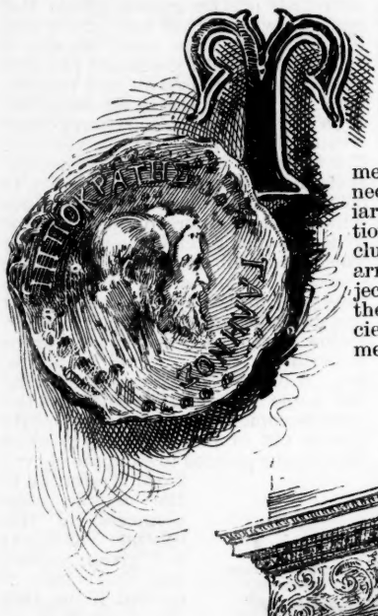
American Druggist

Vol. XIV. No. 4. NEW YORK, APRIL, 1885. Whole No. 130.

[Original Communications.]

THE ARCHITECTURE AND ARRANGEMENT OF DRUG-STORES.

THE internal economy of the drug-store, in its material aspect, may be considered from various standpoints. There is the fundamental standpoint of necessity; the auxiliary one of decoration. Necessity includes the different arrangements and objects indispensable to the various exigencies of the establishment or its trade.



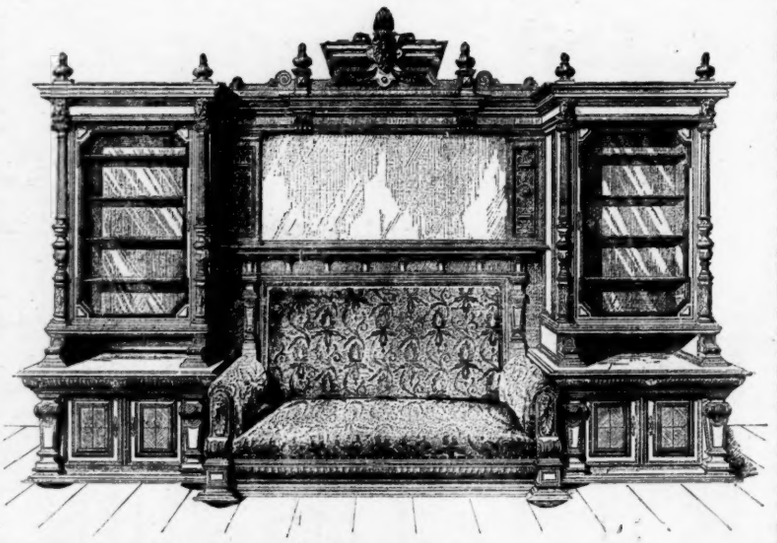
Decoration implies the most pleasing presentation of the essential forms and elements in the scheme of necessity. Let us first consider the question of necessity, under which head, as a practical application of the principle, we may regard the disposition of objects in the store, and the general divisions of the allotted space. Architecturally, the first consideration is convenience, which includes making the most of every square foot of ground, and placing the windows and doors where they will serve their purpose best, and occupy the least of the interior space.

Observation of drug-stores in general shows us that every store, in which the retail goods trade is combined with the prescription business, is divided into two parts—the store proper, and the pharmaceutical regions in the rear. These are usually separated by a prescription desk. This conventional plan of interior arrangement is, of course, modified according to circumstances, but it is safe to assert that, in most city drug-stores, which are apt to be deep and narrow, this scheme serves as the ground plan of the interior architecture. Sometimes, another desk, known as the approach desk, breaks the monotonous length of the store; intervening between the door and the prescription desk. This, however, is not an essential of the drug-store equipment, whereas the prescription desk is one of the most important factors in the scheme of necessity. In New York drug-stores, the prescription desk is usually found at what appears to be the extreme rear of the store, so that a person looking in at the window or door would fancy that the large and imposing object which extends across the width of the establishment formed one of its boundaries. With what lies behind the prescription desk, the general public is not immediately concerned. It is the abode of pharmaceutical mysteries as well as of pharmaceutical convivialities. This desk, from its significance, no less than its material importance, should be carefully selected as to form, color, size, and general character. It may be massive and monumental, or light and airy. It may wear a clock upon its brow like a coronet, or it may be finished with a florid wooden decoration. It may have large medicine-pots in rows on its shelves or merely glass cases, in which small perfume bottles display themselves alluringly. A simple but good model in light cherry wood has square panels of "Lincrusta Walton" inserted in the wood on each side of the open space in the middle. The panels are skilful imitations of bas-reliefs in brass and copper, of excellent design, and in color and tone they harmonize well with the wood. It is always necessary that decorative accessories employed in this way should form a harmonious union, in all respects, with the substances to which they are applied.

An excellent example of a prescription desk of an imposing character is found in an accompanying illustration. This is an elaborate and massive piece of furniture. In a well-arranged and consistently decorated drug-store, the prescription desk, as being the most conspicuous and important article in the scheme of necessity, may give the keynote of decoration as to color, form and style, the kind of wood to be used in the other accessories of the establishment, and so on. The desk here presented is certainly a handsome piece of furniture. The broad and comfortable

seat upon which the customer may repose himself, while he is waiting to have his prescription made up, the fine plate-glass window or mirror above the rows of conveniently placed shelves, all contribute to the practical usefulness of the design. In form and style it is very good, decorative in appearance, and appropriate to its use. It appears to be made of some solid and substantial wood. Whatever this wood in kind or color, it should, if possible, be used throughout the store wherever wood is required in the fittings. If oak, oak should be employed for the closets or shelves that extend along the sides of every drug-store, the friezes and cornices, the dividing columns, the other desks, chairs and long seats, and wall-panels. It would not be in good decorative taste to use an elaborate and costly prescription desk, say of solid oak, black walnut, or some other rich wood, and have the rest of the store fitted up in common pine painted white. If the prescription desk be florid and ornamental in style, the other accessories should have the same character.

As regards the question of interior arrangement irrespective of intentional decoration, valuable suggestions may be gathered from the study of the two illustrations showing the value of the arch in modern shop architecture, which are here presented. In both of these designs, the store is divided by an arched doorway which combines beauty and grace with general convenience. In remodelling a store or apartment which consisted of two rooms, into a drug-store, instead of removing the dividing wall or partition after the ordinary manner, it would be much better to cut away only the middle of the wall and form a wide open doorway. This is illustrated in the design in which a decorative jar with palms growing in it is seen at the right. There is considerable elegance in this bit of interior architecture, visible elegance of form and suggestive elegance of color. In form, the prevalence of straight lines and rectangles observable in the composition forms a ground note of strength and substantiality, in ceiling, doorway, side cupboards, and in the case of shelves seen beyond. The presence of the graceful, long low arch, with its interior scrolls, the rounded jar-forms, the curves of the palm-leaves and the stand, the long flowing lines of the *portière*, save the design from anything like harshness and bring all its parts into symmetrical relation. The leading ideas of form which are found in this illustration are epitomized in the long curve of the arch, and the wide horizontal band of velvet or plush that extends across its base, under the shelf on which rest various small jars. The color, in this illustration, is of course chiefly imaginary, but the artistic eye can at a glance construct a scheme of color-decoration, which shall be partly suggested by the forms, and will enter into harmonious relations with them. To begin with, so elaborate a design, as regards architecture and form, should be executed in rich and solid materials. Oak would be a desirable wood to use for the cupboards of shelves, the finishings of the arch, and possibly the divisions of the ceiling.



This is, in color, a sort of indefinite amber yellow of excellent tone. The scroll work in the arch might be either of bronze, brass or copper, according to its color relations with the rest of the scheme, and especially the *portières* which would be most effective in dark green or dark red velvet, forming a strong contrast of tone, as well as of color, with the oak. Bronze scroll-work would be the most conducive to unity of effect, and the jar and pedestal under the dark green palm should then be, if possible, of bronze of the same tone. The bits of pottery used decoratively in this illustration should be dark and rich in color and tone. It will seen from these details that the color-scheme most appropriate to this arrangement of forms is one noticeable for simplicity and breadth. We have the broad light masses of the oak, and the broad dark masses of the velvets, bronzes, and palm-leaves. The judicious management of cross-lights coming from different parts of the two divisions of the store, and centering about the open archway, unites the two strongly opposed color masses in an even neutrality of tone. If dark woods be used instead of oak, it would be well to have *portières* light in color and material, to use brasswork instead of bronze, and light-colored pottery and pale green plants instead of dark, the idea being to pay due regard to that law of color-contrast which is one of the fundamental principles of artistic decoration. Whatever scheme of color be used according to the form-suggestions of this illustration, small, irrelevant masses of color should be carefully avoided, and the two broad general ideas of color and tone requisite for the desired contrast as nearly adhered to as possible. This scheme of architectural necessity and decoration admits of no pettiness, triviality, or artistic coquetry. It must be taken *au grand sérieux*, in order to reveal its highest possibilities.

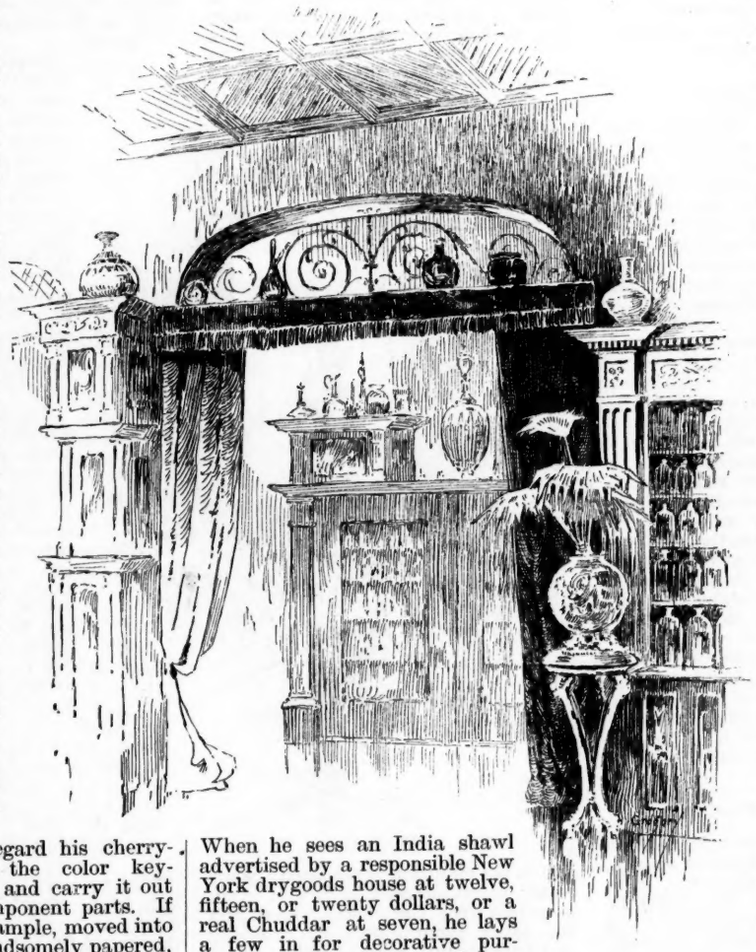
The other scheme of decoration herewith presented, should be handled in a directly opposite manner. In form and in consequent suggestion of color, it admits of caprices, fantasy, and decorative coquettishness. It will bear a small carnival of color without injury to its elements of form. It is broken up into small detached masses, and this idea is carried out consistently, from the panes of glass in the window and archway, down to the twisted cables into which are shaped the legs of the various cases and chairs. The most suitable wood for a similar scheme is red cherry, which is now largely used in drug-store interior arrangements. It lends itself harmoniously in color to a rather light and gay scheme of decoration, being of a brilliant red with suggestions of yellow in it. We will assume, that, in this pleasing design all the wood-work is of this color. The window seen in the background and the space under the arch dividing the rooms are both filled in with colored decorative glass, that fact being indicated by the management of the lines in the illustration. The glass may be of several different varieties, colors, designs, and shapes, provided they all tone harmoniously into the general effect. Red and yellow glass, the pale green that imitates early glass, small mosaics of glass studded with jewels and pictorial glass can all be used in this scheme, being all more or less in the same line of color as the orange red cherry-wood which forms the chromatic keynote. The pieces of pottery used as decorations should have the same quality of color; brilliant blues and reds into which yellow enters or monochrome yellow should receive the preference. The curtain should be of light texture —raw or Indian silk. Velvet is too heavy for unity of effect in so joyous and gay a decorative scheme. In color, yellow or red, used either together or monochromatically, would be desirable. A brocaded silk curtain, giving the same mingling of colors as the kaleidoscopic glass windows, would not be out of place. A cherry wood floor or one painted to simulate cherry wood is essential to the artistic completeness of this scheme. The bright red, green, yellow, and blue bottles of colored liquid that form the conventional ornaments of the druggist's window work in very nicely with this scheme of decoration. The best kind for a window broken up into small spaces of color is that which has a cluster of small bottles at the top and a larger bottle below, the whole being framed in shining ornamental brass or copper. If metal-work be used in this scheme, copper is preferable from its harmony of color and tone with the rest of the elements. Dark red leather, or stamped Japanese leather should be used for the chairs and other seats, the woodwork of course being of cherry, or, if needs must be, a good imitation of it. This is a bright, attractive scheme of decoration for a popular drug-store, neither expensive nor over-ambitious, but one that suits the demands of the average druggist better than most of the schemes suggested by amateur or professional decorators.

The large illustration on the front page gives the external architecture of the drug store in which the scheme of interior decoration just described is employed. Its harmony and appropriateness strike the eye at a glance. The window arch, seen in the illustration of the interior, is here viewed from the outside. That over the door corresponds with the one between the two divisions of the interior. We have in this exterior the same small irregular masses of color and form as in the scheme of interior decoration, the broken chromatic effects, the different kinds of ornamental glass, of metal work, and the general character of fantastic coquetry and caprice in architecture. This is a really beautiful design—consistent and united in impression, sufficiently broad and firm as a whole and wearing its mass of elaborate ornamentation lightly and

gracefully, keeping it properly subordinated to the plan of the whole. The architect has followed the dictates of necessity by using the space accorded him to the best advantage. He has advanced the window and retired the door, thus giving the whole front character and prominence. In general arrangement, he has judiciously combined rectangles and straight lines with curves. The excellent disposition of the window with its border of small panes of colored glass and its one large pane, through which the interior is visible, merits notice. This idea, slightly modified, is repeated in the door. The carving of the frieze and of the spaces above and between the arches is very graceful. Curved lines and scrolls predominate, in contrast with the angles and straight lines of the lower part of the design, offering the idea of grace superadded to a foundation of strength. The mortar and pestle, the conventional symbol of the pharmacist, are very neatly introduced into the carving between the arches and above the middle column. The portion of the frieze bearing the name is managed with much skill.

The question of color in drug-stores is one that demands careful study and consideration.

Every drug-store should be pitched in a certain key of color which should be relatively regarded in every accessory and detail. It is not necessary that the keynote should be struck by any one object, but whatever object be chosen to lead the rest, its leadership should be consistently recognized and followed. If, in remodelling or refitting his store, the druggist remembers that he owns a handsome set of cherry-wood cases—a brilliant orange-red in color — he would scarcely wish to fresco his ceiling in light blues or rose-pinks, or to paper his walls with a design in crimson-red. He would rather regard his cherry-wood fittings as the color keynote of his scheme and carry it out through all the component parts. If the druggist, for example, moved into a store that was handsomely papered, he would do well to take the colors and the tone of walls and ceiling for the keynote of his decorative scheme and make all the other elements harmonize with them or else contrast agreeably. Where curtains and *portières* are used in dividing the sections of a drugstore, they should be chosen with great care, both as to color and texture. Any decorative material is permissible within certain restrictions; but cheap, tawdry and pretentious fabrics, especially those verging on the brocaded damask order, should be shunned. Just now, there is a sort of epidemic of this kind of material, and the person who aims at good decoration should avoid it. Among lighter fabrics, he can always fall back upon Indian silk, an essentially artistic material, beautifully pure in color and forming graceful folds, whatever its arrangement may be. Plushes of good color and silken texture make sumptuous hangings, and English velveteens, which look almost like silk velvet, have a rich look, used as curtains, especially in dark colors. Gold and silver fringes add much to their effect. There are many inexpensive oriental fabrics which make admirable hangings. They may have been manufactured at Bradford, England, but in any case they have the stamp of the East upon them and are vastly preferable to the American imitations of them which are found at every large dry-goods store and every upholsterer's and are freely used in domestic furnishings by many misguided householders. India (Delhi) shawls can be used as *portières* and are very handsome in that relation. They are supposedly genuine at the low prices at which they are advertised by New York firms, from time to time. A good decorator or a good collector of *bric-à-brac*, which means about the same thing, bides his time and keeps his eyes open for bargains and "picks up" as he goes on. When he sees an India shawl advertised by a responsible New York drygoods house at twelve, fifteen, or twenty dollars, or a real Chuddar at seven, he lays a few in for decorative purposes or with an eye to future trade. These Delhi shawls are rich in color, dull orange-red generally forming the ground tone, and they would harmonize exquisitely with cherry wood. Imagine such a scheme of decoration with green plants in light bronze jars, bits of wrought copper or bronze work about doors and windows, and wall and ceiling covered with paper in which orange-red of good tone was the prevailing note. Of course, so strong a color would have to be very skilfully managed to prevent its becoming obtrusive or wearisome to the eye. More attention should be paid to the question of *portières* and curtains by druggists than has hitherto been accorded. As far as beauty is concerned, they can be made to add greatly to the attractiveness of the store. There are various ways in which they can be made useful besides dividing the store in connection with the wall-arches. This, of course, depends upon the architecture of the establishment. The keynote of color may be struck by the *portière* and everything else in the store may be keyed up or down to meet it.



An original device in drug-store decoration would be the development of a single decorative idea, say the Japanese, the Egyptian, renaissance, or the American colonial. This fashion is much folowed at the present time in the decoration of dwelling houses, and the same principles may be appropriately applied to drug-store adornment. A drug-store fitted up in Japanese style would be extremely attractive. The scheme might be made elaborate and costly, or simple and inexpensive, according to circumstances. A good scheme for a small narrow drug-store had the cases and wall-fittings in white maple—a graceful, unobtrusive kind of wood of a mottled cream-color. The walls were covered with a paper in which pale yellows and browns predominated. On the ceiling the same colors were found in broader masses and combinations. In the small window were the usual brilliantly colored bottles, with different harmonizing objects tastefully disposed about them. The soda-water apparatus was of neutral-tinted marbles, and the counter before it was hollowed out to economize space. A good bit of decoration was formed by a brass wire object, several feet high, and shaped like a squat obelisk, which was full of sponges. This was placed between the window and the soda-water counter. The prescription desk showed a rather neat arrangement. It was of white maple, simple and light in style, harmonizing with the character of the wood. It completely separated the store proper from the laboratory behind, and entirely concealed it. The lower part on either side consisted of inclosed shelves, containing perfume bottles and similar goods. A fine plate-glass mirror, over two feet wide, extended to the top of the desk, giving a long and narrow effect, and reflecting everything that passed, the door being directly opposite. On either side of the upper part of the mirror, above the cases of perfume bottles, was an alcove draped with small curtains of dark red and dark green velvet, bordered with gold fringe and looped back like window curtains. Each alcove had one dark red and one dark green curtain. In one alcove was the conventional jar filled with dark red liquid. In the other, at the left, was a corresponding jar filled with light green liquid, which gleamed and wavered in a mysterious and alluring manner, and was as translucent as a bit of Venetian canal with the spring sunlight upon it. Looking in at the shop door or window, this green light immediately attracted one's attention, and seemed to beckon one on like a sort of drug-store Lorelei. This novel and

admirable bit of stage-effect was produced by keeping a gas-jet constantly burning behind the jar. It was not visible from the front. This prescription desk was not only a capital example of color arrangement, but it illustrated an important decorative principle in the lighting. Without this effect of light, the shadowy dusk at the back of the store would have robbed the colors of their effect, the front part of the establishment being in strong daylight. The hidden gas-jet supplied the necessary relief.

Cocaine Fungus.

MR. H. FENWICK (*Lancet*, Jan. 31st) has noticed, in a 4-per-cent solution, after keeping some time, a peculiar mould-growth, which seems to possess the power of setting up inflammation of the mucous membrane to which it is applied. He had treated fifty cases of stricture successfully with this solution, but then three patients followed who, after treatment, returned with urethritis. On examination of the solution, the mould was observed. A new solution was made, and no further complications occurred.

Preservative of Cocaine Solution.—Prof. Schnitzler, of Vienna (*Wiener Med. Presse*), after experience of one hundred cases, says he has found that glycerin in the solution prevents the formation of fungus and promotes the absorption of the cocaine, while alcohol irritates the mucous membrane. He advises a solution as follows:

	Parts.
Cocaine mur.....	2 to 5
Glycerin.....	20
Distilled Water...	80

This is applied with a camel's hair pencil two or three times. Anæsthetic action occurs in five to ten minutes, and lasts usually from twenty to thirty minutes. He has found that the addition of two per cent of morphiæ mur. to the above strengthens the action of the cocaine and makes it more permanent.

For insufflation for the nasal and throat passages he recommends a snuff composed 2 to 5 parts of cocaine of mur., 20 of plumb. acet., and 80 of powdered sugar, or 2 to 5 of cocaine mur., and 50 each of bismuth subnit. and sugar.—*Chem. and Drugg.*

Euphorbia Pilulifera.

As a remedy for asthma the *Euphorbia pilulifera*, or pill-bearing sponge, has of late attracted attention. The plant is indigenous in Australia (Queensland) and the tropical portions of Asia, Africa and South America. The decoction is made by steeping an ounce of the fresh or half as much of the dried weed in two quarts of water and reducing it by simmering to one quart, of which the dose is a wine-glassful to three or four wine-glassfuls, or of the aqueous extract one or two grains daily. The active principle appears to be a gum-resin, soluble in water or in dilute alcohol. Besides the observations of several Australian physicians, the most important paper on the remarkable effects of the remedy is that of Dr. Marsset, of the Clermont Ferraud Hospital, of Paris, who has written a *thesis* of some length on its effects on twelve cases of asthma and upon animals. It is best given after the evening meal.—J. CHRISTY.

The Deaths from Patent Medicines are estimated by a writer in the *British Medical Journal* to be about one hundred and fifty thousand annually.

NOTES ON PRACTICAL PHARMACY.*

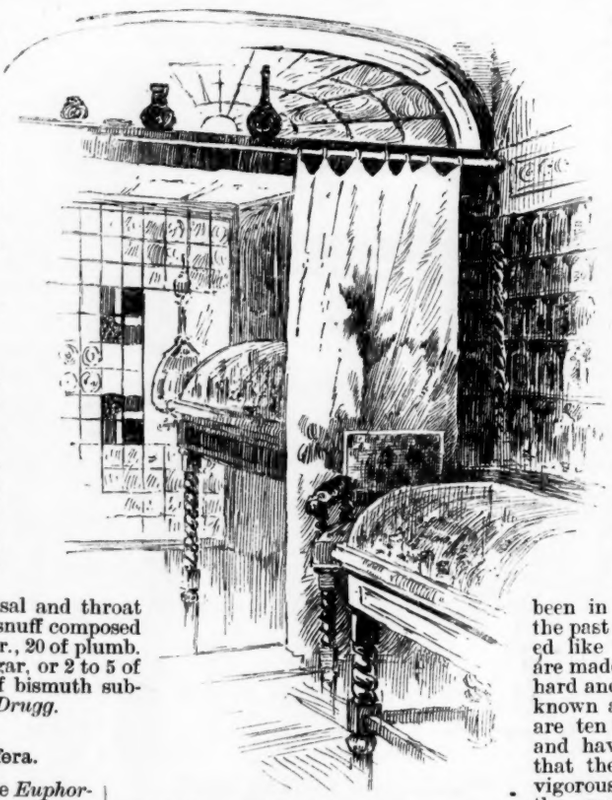
(Continued from page 29.)

EMULSIONS.

THE word emulsion (*emulsio, emulsum*) designates the intimate fluid mixture of mucilaginous or resinous substances and water with oils, fatty, or resinous materials. An emulsion is turbid and has a milky appearance. According to the materials from which they are prepared, we distinguish seed, oil, balsam, gum-resin, resin, wax, and spermaceti emulsions. Seed emulsions, as true emulsions, are also differentiated from the others, spurious emulsions.

SEED EMULSIONS

are prepared from oleaginous seeds, for instance, almonds, poppy seed, hemp seed, henbane seed, carduus benedictus, etc., by crushing and trituration with water. The seed is washed several times with water in order to remove any adhering dust. This is done in the same mortar in which the emulsion is prepared. Some water, about *one* part to *ten* of seed, is poured over the cleaned seed, and the latter comminuted by crushing and friction until a sample, when taken out, can no longer be felt between the fingers to contain any palpable particles of the albuminous body of the seed. The seed now forms a soft doughy mass which is divided by trituration and stirring in the required quantity of *cold* water (infusion, decoction), which is to be added by degrees in small portions under agitation. When this is done, the whole is strained. The latter operation is best effected through milling (bolting cloth) or through loose-meshed linen, but stained cloths must not be used for white emulsions. The most important points about the cleaning of milling strainers have been given above.



The albuminous and mucilaginous substances contained in the seed envelop and hold in suspension, in the water, the oil of the seed divided into very minute droplets. When the seed is crushed or rubbed to pieces without being moistened, a portion of its oil is expressed, and though it at first mixes with the emulsion, it soon gives rise to the separation of a fatty cream when at rest. Emulsions of poppy seeds and almonds have the color of good cow's milk. Almond emulsions are always made from decorticated almonds unless the physician objects [which would be pure pedantry on the part of the latter]. In order to remove the skin, which imparts to the emulsion a rather acrid taste and bad color, there is poured over the almonds hot water of at most 60–70° C. [140–158° F.] which is immediately poured off again as soon as the skin can be easily stripped off by pressure with the finger. Decorticated almonds give a pure white emulsion. *Emulsio amygdalina* is prepared from one (1) part of almonds and sufficient water to bring the strained product to ten (10) parts.

Poppy seed, *Semen Papaveris album*, when to be used for an emulsion, is soaked for five or ten minutes in warm (not hot) water so as to soften it somewhat, because when dry it is very hard and would necessitate prolonged pounding. It is self-evident that the seed, which is still moist after the water has been poured off, requires no addition of water during the crushing. Ten (10) parts of *emulsio sem. Papaveris* are prepared from one (1) part of the seed.

Emulsion mortar. Seed emulsions are prepared in brass, marble, or porcelain mortars. In iron mortars they become gray. Brass mortars, of course, must be scrubbed very bright, but it is better not to use them for emulsions. Marble mortars have a wooden pestle, but it is preferred not to use them, as they are not durable; there have been in the market, however, for the past twenty years mortars shaped like those for crushing, which are made of a peculiar, exceedingly hard and strong porcelain-like mass, known as *emulsion mortars*. They are ten to twenty centimetres high and have a pestle of boxwood so that the seed can be crushed by vigorous blows without endangering the mortar. [The author means "Wedgewood" ware or something akin to it. Emulsion mortars have a deeper and more concave bottom than those used for trituration.]

Straining causes a slight loss of weight of the fluid. The allowance for this loss is half the weight of the seed.

Where the quantity of the seed is not given, take one part of seed for ten parts of the strained product. This agrees with the directions of the German Pharmacopœia.

Seed emulsions must neither be brought to a high heat nor be mixed with very hot fluids, because this would coagulate the vegetable albumin and thus hasten the spoiling of the emulsion. Many of the concentrated acids likewise coagulate the albumin, hence they should always be diluted with three to five times the amount of water. This should be done also with alcoholic non-resinous additions.

℞ Amygdalæ dulcis...	20 Gm.	300 gr.
Amygdalæ amaræ,	5 "	75 gr.
Aq. destill.....	150 "	5 fl.oz,
Aq. aurantii florum	50 "	1½ "

* The basis of this series of papers is the latest edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany, and to insert others which are more characteristic of American customs. Editorial additions are inclosed in [ ]. The use of the original text has been kindly granted by Dr. Hager.

Fiat emulsio, cui adde

Extracti Hyoscyami	1 Gm.	15 gr.
Syrupi	25 "	5 fl.dr.

M. D. S. Tablespoonful every two hours.

The strained product must amount to 200 Gm. [about 8 fl. oz.]. The almonds (which need not be decorticated, an extract being added) are moistened with 3 Gm. of the water, crushed to an impalpable mass, and made into an emulsion with the water. The extract is dissolved in some of the emulsion, or added in solution.

SEED EMULSIONS WITH FATTY OILS.

The emulsification of a fluid fatty oil by means of an albuminous and oleaginous seed is effected thus: The seed, moistened with water, is rubbed to a soft dough in an emulsion mortar, then the oil is added in small portions, together with very small quantities of water, under agitation, until a homogeneous mass results, which is gradually diluted with the remaining water, and strained through dampened milling (nettle cloth) or straining muslin. That in the present case there is a double emulsion cannot be questioned.

℞ Amygdalæ dulcis.	20 Gm.	300 gr.
Olei Ricini	30 "	7 fl. ʒ
Aq. Fœniculi,		
Aq. destillatæ, ana	100 "	3 fl. oz.
Sodii nitratis	15 "	240 gr.
Syrupi	25 "	5 fl. ʒ

M. Fiat emulsio.

Not unfrequently the prescription directs a simple mixture of a seed emulsion with a fatty oil. For instance:

℞ Emuls. Amygdalæ	150 Gm	ab. 4 fl. oz.
Olei Ricini	25 "	6 fl. ʒ
Sacchari	15 "	240 gr.

M. D. S. Shake vigorously. Tablespoonful every two hours.

The text of this prescription demands merely a mixture of the oil with the emulsion, which mixture is prepared equably by the dispenser by vigorous agitation. Emulsification of the oil would be admissible only after consulting the prescriber.

OIL AND BALSAM EMULSIONS.

The fatty oils such as *Oleum Amygdalæ expressum*, *Papaveris*, *Olivæ*, *Lini*, *Morrhuæ*, *Ricini* and the balsams—*Balsamum Copaibæ* and *Peruvianum*—cannot be formed into intimate mixtures with water, but this is very easily effected by a mucilaginous adjuvant (emulgent), best by mucilage of acacia, which envelops the particles of oil, and is capable of holding them permanently in suspension in the aqueous liquid. Yolk of egg and mucilage of tragacanth also belong to the emulgents. Should a smaller quantity of gum arabic be used than one-fourth of the oil or balsam, the emulsion will not be very stable, and will fail altogether with some oils; on the other hand, *more than half the amount of the oil is never taken of gum arabic* for the preparation of an emulsion, *the remainder of the prescribed gum being added as mucilage to the finished emulsion.* If this fact be well borne in mind, the preparation of every oil or balsam emulsion will succeed, provided the quantity of water be half of the total weight of the gum and the oil of balsam. For instance, 4 parts of *Oleum Amygdalæ* and 1 part of gum arabic are to be emulsified with water. The total weight of the two substances is 5: half of five is 2½. [Hence we have the following proportion, which should be fixed firmly in the memory:

1. *Lowest proportion:*

Oil	4 parts,	total, 5 parts.
Gum	1 part,	
Water	2½ "	

2. *Highest proportion:*

Oil of Balsam	4 parts,	total, 6 parts.
Gum	2 "	
Water	3 "	]

It is calculated that the emulsifying power of 10 Gm. of gum arabic equals that of one yolk of a large hen's egg, or of 1.25 Gm. [20 grains] of tragacanth, or of 1 Gm. [15 grains] of salep.

The *preparation* of an oil or balsam emulsion can be done in one of three ways.

The *first* and most certain for all cases is to thoroughly mix the powdered gum with the water in a wide mixture mortar, by agitation with a broad pestle; after this has been done, add the oil or balsam *at once*, and emulsify it by continued agitation, during which any of the thick mucilage or oil adhering to the pestle or the wall of the mortar must be scraped off and mixed with the emulsion. In two or three minutes the emulsion is finished.

If the above proportion of the components of the emulsion is strictly maintained, the emulsion will not separate or spoil.

The *second* method is to place the gum into the mortar, pour the oil or balsam upon it, and then add the water in such a way that it, as it were, is enveloped by the oil, and does not touch the gum. The three substances are then emulsified by sudden and rapid agitation.

The *third* method is to triturate the oil or balsam in the mortar with the gum, then to add the water at once and triturate.

The following table, giving the quantities of gum, water, oil or balsam necessary for an emulsion, will be found convenient.

Balsam or oil Emulsion. Parts.	Balsam or Oil. Parts.	Gum arabic. Parts.	Water for the Preparation of the emulsion. Parts.	Water to complete the emulsion Parts.
250.0	25.0	12.5	18.75	193.75
240.0	24.0	12.0	18.0	186.0
200.0	20.0	10.0	15.0	155.0
180.0	18.0	9.0	13.5	139.5
175.0	17.5	8.75	13.12	135.63
160.0	16.0	8.0	12.0	124.0
150.0	15.0	7.5	11.25	116.25
125.0	12.5	6.25	9.38	96.87
120.0	12.0	6.0	9.0	93.0
100.0	10.0	5.0	7.5	77.5
90.0	9.0	4.5	6.75	67.75
80.0	8.0	4.0	6.0	62.0
75.0	7.5	3.75	5.62	58.13
60.0	6.0	3.0	4.5	46.5
50.0	5.0	2.5	3.75	38.75
40.0	4.0	2.0	3.0	31.0
30.0	3.0	1.5	2.25	23.25
25.0	2.5	1.25	1.87	19.38

Of the above described three methods of preparing an oil emulsion, the experienced usually prefer the second.

[Those who have never made many emulsions, and would like to acquire proficiency, may exercise themselves in trying the three methods above given, and select that which succeeds best in their hands. There is great difference in the relative success attending these methods in the hands of *self-taught* dispensers. Proper training, under the eye of a competent pharmacist, of course, will make any single process successful. Those who are already accustomed to use a certain process, are advised to adhere to it, and not to try new methods rashly.

The Joint Committee which published the New York and Brooklyn Formulary, gave a standard formula for a *Stock Emulsion* of Cod-Liver Oil (Emulsio Olei Morrhuæ Fortior), which was to be kept in stock and needed only completion by the addition of such ingredients as the physician might wish to order. This emulsion was ordered to be prepared from 2 av. oz. of powdered Acacia, 4 av. oz. of powdered Sugar, 16 fl. oz. of Cod-Liver Oil, and enough water to make 28 fl. oz. An improvement in manipulation was subsequently suggested by Mr. Theodore Louis, of New York, which has rendered the process one of the most successful and advantageous ones, inasmuch as its execution not only requires but a short time (10 to 15 minutes), but is not even interfered with by interruptions during the manipulation. The improved process is as follows:

Acacia, in fine powder	2 av. oz.
Sugar, in fine powder	4 av. oz.
Cod-Liver Oil	16 fl. oz.
Water, 8 fl. oz., or enough to make	28 fl. oz.

With the Acacia, 4 fluid ounces of the Cod-Liver Oil and 3 fluid ounces of Water, prepare an emulsion in the usual manner. Mix with it the Sugar, and then add gradually, triturating well during each addition, alternate portions of the remainder of the water and of the oil in quantities of about 1 or 2 oz. at a time.

The result is a perfect and faultless emulsion.

While a properly shaped mortar is probably the best form of apparatus for preparing emulsions on a small scale, there are other ways in which excellent emulsions may be prepared.

One of the best is that proposed by Hartwig, in 1875, who recommends a vaginal syringe for mixing the ingredients of the emulsion. This certainly produces, in a comparatively short time, a very good and uniform emulsion of a beautiful creamy consistence, but does not appear to be applicable to all kinds of oils equally well. It is very good indeed, for cod-liver and almond oil.

Other mechanical appliances, such as butter-churns, mixing machines, egg-beaters, etc., have also been suggested and used with good success. Such or similar appliances will necessarily have to be resorted to when emulsions have to be made on a large scale.

Fixed Oil Emulsions may also be produced by the intervention of other agents, besides gum arabic or tragacanth. One of the best of these is Irish Moss, and there are several proprietary emulsions on the market which are prepared with this.

According to Dr. A. B. Huested (see NEW REM., 1881, 194, where "Irish Moss" should be substituted in the title for "Iceland Moss"), a mucilage made from 2 drachms of Irish Moss to 16 fl. oz. of finished mucilage, is preferable for cod-liver oil, and the same amount of moss for 12 fl. oz. of emulsion of castor oil. These emulsions may be made to contain 50 per cent, and over, of oil.

Contrary to what is the case with gum emulsions, the presence of glycerin appears to contribute to the stability of this kind of emulsion. The addition of a little common salt to the emulsion likewise tends towards its preservation. The mucilage of Irish moss may be kept in stock by proceeding as follows:

Irish Moss	4 troy oz.
Water	q. s.
Glycerin	48 fl. oz.
Olive Oil	q. s.

Wash the Irish Moss with 2 or 3 portions of cold water, using friction between the hands, until it is perfectly clean. Then put it into a suitable dish and pour upon it 4 gallons of water. Apply heat, gradually increasing until the boiling point is reached, continue till the moss is nearly all dissolved and the whole is reduced to about 1½ gallons. While still hot, strain through wet flannel without stirring or pressure, mix the strained liquid with the glycerin and enough water to make 2 gallons and introduce the finished product into vials, suitable for the usual daily demand of the store (4 oz., 8 oz., 16 oz., etc.), which are to be heated in a water-bath to the boiling point so as to expel all inclosed air-bubbles. Then cautiously pour a little olive oil into

each bottle, cork and seal. Thus prepared, the mucilage keeps indefinitely.

For use, agitate a definite volume of the mucilage with the prescribed quantity of oil.

Such emulsions are quite stable, though the subdivision of the oil is not as thorough and minute as when gum arabic and trituration is used.

Another suitable agent for emulsifying cod-liver oil is *Extract of Malt*. Curiously enough, there have been formerly in the market more brands of extract of malt, which yielded a satisfactory emulsion by trituration with cod-liver oil, than at the present time. One of us has repeatedly prepared such emulsions, a number of years ago, with scarcely any failure. In recent years, equal success was not attained.

Condensed milk Borden's) was recommended by Cushman in 1858, as an emulsifying agent for castor oil, the following formula being given (*Drugg. Circ.*):

Condensed Milk	½ fl.oz.
Castor Oil	1 "
Syrup of Lemon.....	½ fl.oz.
Water.....	q. s.

Triturate the condensed milk with about one fl. drachm of the water, then add the oil and finally the syrup and remainder of water, with constant trituration.

Alkalies and alkaline earths have the property of converting oils into soaps. A small quantity of soap can hold in suspension a considerable amount of oil. If solution of soda, potassa, or lime, be added to fixed oil in quantity insufficient to combine with the whole oil, a homogeneous mixture containing the free oil in suspension is formed. This is, however, *not* an emulsion. Some slovenly dispensers sometimes use lime-water to facilitate emulsion. This is altogether wrong, and should not be countenanced, unless specially directed.

From a therapeutic stand-point, mild saponified oils are not objectionable, in certain cases. At all events, the pancreatic juice will more readily act on a faintly alkaline or saponified oil, than on a neutral or acid one. On the other hand, cathartic oils (like castor oil, olive oil), should never be rendered alkaline, but preferably combined with an acid, so that they may at least partly escape digestion.

An emulsion made with the aid of an alkali need not be prepared in a mortar. The alkaline solution, diluted with enough water (or aqueous solution of any salt ordered in the prescription) to about equal the volume of oil, is first put into the bottle, the oil then added, and the whole well shaken, the remaining ingredients being afterwards added.

Glyconin or glycerite of yolk of egg (see U. S. Ph. under *Glyceritum Vitelli*) is an exceedingly valuable emulsifying agent, not only for fixed, but also for volatile oils. It is merely a solution or mixture of the yolk of egg with glycerin, and if carefully kept, can be preserved unchanged for years. It is capable of emulsifying more than its own weight of cod-liver or other oils.

Experience, particularly in this country, has shown that not only are there many differences in the choice of emulsions on the part of practitioners, so that in fact the pharmacist must be acquainted with all the varieties and forms, but there also occur cases where patients become tired of a certain kind of emulsion or of the pure cod-liver oil itself, and where some other form of administration must be resorted to. It is chiefly for this reason that so many methods of preparing emulsions, or vehicles for the oil, are desirable for selection.]

When the components of the emulsion have been united into a milky, homogeneous mass showing no oil droplets on the surface—a fact recognizable on trituration by a peculiar crackling noise—and when the mass adhering to the pestle and the wall of the mortar above the level of the emulsion, and which is perhaps insufficiently mixed, has been scraped off with a piece of cardboard and incorporated with the rest, a part of the remaining water is added gradually in small portions under continued stirring, the mixture poured into the bottle, and whatever adheres to the wall of the mortar is rinsed off with the last of the water.

The first method has been called the most certain, although excellent emulsions are made also by the other two methods, even in a shorter time. Still, in practice we meet with some rare cases in which *Oleum Ricini* and *Balsamum Copaibæ* could not be emulsified by the second and third methods, while with the first method the emulsion became perfect. The cause of this is to be sought either in the fact that in the latter two methods the gum is not brought rapidly enough into sufficient solution or that special peculiarities of some qualities of castor oil and copaiba balsam have some influence. Moreover, it should be stated that *Oleum Sesami* and other oils sophisticated with it cannot be at all or but imperfectly emulsified according to the rules above given.

[Mr. Joseph Ince has given very valuable hints on emulsions—in *Chem. and Drugg.*—from which we abstract a few points:

Let the dispenser know when he has done his task, and when once he has formed his emulsion, let him add rapidly the remaining ingredients. Many an emulsion is ruined by overmanipulation, and the incorporated oil is again thrown out by continuous and excessive stirring.

When liquids, limpid or viscous, are to be combined with an emulsion, the very gentlest manipulation should be employed. Increase of pressure generates heat, and heat is fatal to union.

The common advice to press vigorously on the bottom of the mortar will be found to be incorrect, except when a solid is to be broken down into a pulp or saponaceous mass.

When a mortar is employed, trituration must always be in a circular direction towards the dispenser, and during preparation, this direction must not be changed.

Emulsions with Mucilage of Acacia. Mr. Ince seems to prefer this to powd. Acacia. He says: 4 av. oz. of picked gum arabic are dissolved in 6 oz. (Imp. Meas.) of *cold* distilled water, by occasional stirring; the mucilage is strained and kept in a cool place. This is used for preparing emulsions, as for instance:

Ol. Amygdalæ expr	℥ 1½
Mucilag. Acaciæ.....	℥ 3
Syrupi.....	℥ 1½
Aquæ destillatæ.....*ad*	℥ 3

Put the whole of the mucilage into the mortar first; add the almond oil by degrees, but rapidly, with constant circular stirring in one direction from left to right. Never add a second drop of oil until the first quantity has been emulsified. This is known by the creamy character of the product, and its tendency to form clear spaces by leaving the sides of the mortar. (Study two things—quickness of motion and lightness of hand. Whatever force be applied, is a dispensing error, which, in so sure a case as in the type formula given, may be of little consequence, but which, when there is a delicate balance between the emulsifying agent and the substance to be emulsified, may upset the process altogether.) To the emulsion add the syrup and the water rapidly; of the latter, ½ oz. at a time. Five minutes should finish the whole operation. *Slow dispensing is bad dispensing.*]

Further additions to emulsions. Not until the emulsion has been diluted with water is it permissible to dissolve in it or to add to it any salts, dry extracts, or other dry bodies, especially such as are very hygroscopic. Subjecting it to high heat should also be avoided. The rule is to dissolve such bodies in water or to triturate them with it before they are added to the emulsion. If this direction be neglected, such bodies abstract water from the concentrated emulsion, and a part of the emulsified oil separates.

Emulsions made with gum arabic thicken to a jelly when borax is added. The admixture of dilute acetic acid will render it fluid again, but such an addition is not justifiable. When the prescription calls for borax, the emulsion, if too thick, must be delivered in a pot instead of a bottle. The thickening or gelatinization, however, does not occur until several hours after the mixture is made.

If an oil emulsion with the addition of Peru balsam is demanded, the oil must be first emulsified, the balsam mixed with two-thirds of its weight of alcohol, and incorporated by agitation in the mortar.

An emulsion which has turned or separated, cannot be improved either by additions or by shaking in the bottle; that would only be waste of time. A fresh emulsion should at once be prepared.

Where the prescription leaves the quantity of gum undetermined, it is customary to take of it half of the directed oil or balsam. If the quantity of the oil or balsam is not stated either, only the amount of the emulsion, *one* (1) part of oil or balsam is taken for every *ten* (10) parts of the emulsion. This proportion has been adopted also by the German Pharmacopœia which directs:

"Oil emulsions are prepared, unless specially directed otherwise, of any oil two (2) parts; powdered gum arabic, one (1) part; and distilled water, seventeen (17) parts." [For making the emulsion itself, 1½ parts of water are required; the other 15½ parts are added last.]

For weighing the oils and the balsam of copaiba the German dispenser keeps peculiar vessels (opodeldoc glasses) which hold about 30 Gm. They are labelled and corked and placed behind the respective stock bottles. These bottles, after having once been used, will not fail to acquire a rancid odor in from ten to fourteen days. This fact, of course, is to be ascertained by the sense of smell before the weighing of the oil. Another clean vessel is taken while the rancid one is being cleaned. Frequent renewal of the cork is necessary. In establishments where oil emulsions are but rarely called for, it is advisable to employ every time a clean porcelain pot, which is more readily cleansed after use than a bottle, for the weighing of the oil.

Emulsions with mucilage of tragacanth are very rarely ordered. For 20 Gm. of the oil take 1 Gm. of powdered tragacanth which is first mixed with 20 Gm. of water in a mixture mortar. This mixture having stood at rest for several minutes, 20 Gm. of oil and 10 Gm. of water are added *at once* and united by continuous agitation into an emulsion which is thinned by degrees by the gradual addition of small quantities of water with continued stirring. Such emulsions do not keep long.

[The *Chem. and Drugg.* remarks here, quite correctly: "This is a mistake, as the many preparations now sold under the name of Cod-Liver Oil Emulsion, prepared with tragacanth, sufficiently testify. Tragacanth presents properties as an emulsifying agent which in many respects are unequalled for such an oil as cod-liver oil; and as a matter of fact, we have found it to keep well for many months, even in the heat of summer.

Two parts of tragacanth will be found sufficient to emulsify from 80 to 100 parts of cod-liver oil, if attention is paid to the following dirctions:

To 2 parts of pure white tragacanth powder add 16 parts of glycerin, and when thoroughly incorporated, add boiling water sufficient to produce complete gelatinization. Taking this as a basis, a mixture of cod-liver oil and water, or better still, cod-liver oil and lime-water, in the proportion of 2 parts of oil to 1 of water, thoroughly mixed, is gradually added in a proper mortar, and with constant stirring. The oily mixture must not be added too quickly, or before the previous addition has been thoroughly emulsified. Flavoring agents may be added.]

If the emulgent be yolk of egg which consists mainly of albumen, it is intimately mixed in the mortar with the oil or balsam without any other addition, and then thinned by the gradual admixture of small amounts of the menstruum.

If a mixture be ordered of oil and a watery fluid without the special remark to make it into an emulsion, it is understood to mean a simple mixture. But if gum or yolk of egg enter into the mixture, an emulsion is to be prepared. For instance:

℞ Emulsionis Amygdalæ.....150 Gm.	ab. 4 fl. oz.
Olei Ricini.. 25 "	6 fl. ʒ
Syrupi..... 20 "	4 fl. ʒ

M. D. S., etc.

Here a simple mixture is prepared.

℞ Emulsionis Amygdalæ.....120 Gm.	ab. 3½ fl. oz.
Olei Ricini.. 30 "	7 fl. ʒ
Acaciæ..... 7.5 "	120 gr.
Syrupi..... 15 "	240 "

M. D. S., etc.

Here the castor oil is to be emulsified by means of the gum and then mixed with the emulsion.

Alcohol, concentrated acids, also saline solutions (many metallic salts) or substances (such as tannin) which throw down or coagulate albumen or mucilage are thinned or dissolved in an appropriate amount of water before before being added to the emulsion. If this precaution be neglected, the emulsion in many cases will not keep or will be decomposed at once.

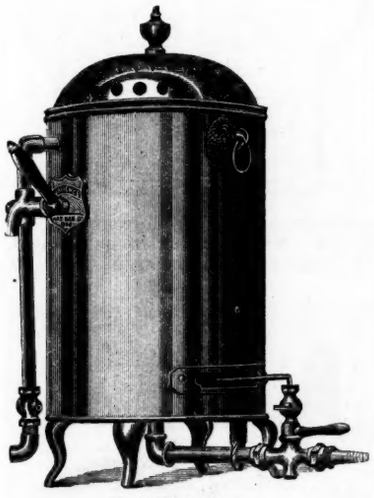
GUM-RESIN EMULSIONS.

The gum-resins such as *Galbanum*, *Ammoniac*, *Myrrh*, *Gamboge*, *Assafetida*, etc., contain, besides many resins insoluble in water, a large amount of a gum-like substance, hence the addition of an emulgent is not absolutely necessary for emulsification with water. In order to emulsify with water, the cleaned gum-resin is rubbed to as fine a powder as possible in a (cold) mortar. In the warm season where this is more difficult, the operation will be facilitated by the addition of one or two drops of almond oil. Then the water is added by degrees in small portions and under stirring. When this mixture forms a uniform dough, more water is added, the milky fluid poured off into the mixture bottle, the remaining coarser sediment again rubbed small, once more emulsified with water, decanted, etc. Coarse deposited impurities are left behind.

Should, as for instance in hot summer weather, the gum-resin be too tough and soft to be rubbed to powder, it is placed in pieces in a mixture mortar, sprinkled with some water, and the mortar and pestle put in a moderately warm place until the gum-resin has acquired the consistence of honey. After adding one drop of almond oil and three drops of mucilage of acacia for every gramme of gum-resin, a uniform milky mixture is affected by strong agitation with the pestle. By the aid of rather warm water, admixed in small portions, a good emulsion is obtained in this manner.

Usually gum or yolk of egg is ordered to facilitate the emulsification. Before being mixed with these emulgents, they must still be rubbed as small as possible. Then the gum acacia (one-half part) and an amount of water equal to that of the gum-resin, or the yolk of egg are added, intimately mixed by vigorous rubbing and then gradually diluted with water. In this case, too, the emulsion is poured off from the few coarser particles which have settled on the bottom. If the amount of gum or yolk of egg is left to the dispenser, he takes of the gum a quantity equivalent to half the weight of the gum-resin, or one yolk of egg for 20 Gm. of gum-resin. If the gum-resin is so soft that it cannot be rubbed to powder, it is made semi-fluid by moderate warming, as above mentioned, mixed with the powdered gum-arabic, diluted with warm water added in small portions, and emulsified by continuous agitation until cold. Should yolk of egg be the emulgent, the gum-resin must not be warmed above 60° C. [140° F.], otherwise the albumen in the yolk would coagulate.

[Apropos of egg-emulsions, it should be borne in mind that they require a skilful hand, the first and last requisite being that the dispenser should abstain from the slightest mechanical force.—Jos. Ince, in *Chem. and Drugg.*]



Rapid Water-heater.

[The Mistura Ferri Composita of the U. S. Ph., is in reality a gum-resin emulsion. According to Mr. Joseph Ince (*Chem. and Drugg. Diary*), it is best to prepare it of four times the officinal strength, leaving out the iron until it is to be dispensed. Mr. Ince's formula, applied to the proportions of the U. S. Ph., then becomes the following:

Myrrh, in small pieces..216 grains	
Sugar.....216 "	
Carbonate of Potassium. 96 "	
Spirit of Lavender..... 1½ fl. oz.	
Rose Water..... 6 "	
To make.....	27 fl. oz.

(of a stock mixture which will ultimately make 108 fl. oz. of finished product).

Beat the myrrh well, with energy, and with considerable pressure. Divide the beaten mass with the powdered sugar, add the carbonate of potassium, and make a thick creamy emulsion with just sufficient of the rose water. Let this stand, covered from the air, over night, and the following morning finish the operation. A few minutes' trituration will restore the whiteness, and such a Mist. Ferri Co. will keep for some years without alteration. For use dispense it as follows:

Stock Emulsion of Myrrh	2½ fl. oz.
Sulphate of Iron.....24	gr.
Rose Water, enough to make.....	9 fl. oz.

Ammoniac and *Assafetida* must be converted into hydrated masses. Let them, before being manipulated, soak in a small quantity of water, when they are readily reduced to a pulpy condition, and form tolerable emulsions afterwards without any additional emulsifying agent.

Incidentally it may be remarked here that carbonate of potassium is a hostile ingredient in any emulsion when there is a second emulsifying agent—such as acacia—present. Mucilage and carbonate of potassium, when present together, prevent the emulsifying process.

Many salts, either neutral or acid, also spoil or interfere with emulsions. Alkaline salts, however, and borax, facilitate emulsions.]

[To be continued.]

RAPID WATER-HEATER.

It often occurs in a druggist's laboratory that a supply of hot water is required at short notice, and it is not always convenient to keep a fire for this special reason. We give herewith an illustration of a convenient apparatus intended to serve this purpose, which is so rapid in its action that it may be said to be almost instantaneous. It is constructed of copper, lined with tin, and is heated by means of gas. The gas-cock is so constructed that a small tube (closed by an independent stop-cock) ends in a small burner, which may be kept lighted, and serves to ignite the gas when the larger stop-cock is opened. The manufacturer guarantees that the apparatus will raise the temperature of a half-gallon of water to 212° F. in from one to one and three-quarter minutes, or a continuous stream of water may be heated from ordinary winter temperature (say 46°) to 150° F., at the rate of from 1 to 1½ gallons per minute. The size No. 1, suitable for druggists' or physicians' use, is 8 inches in diameter and 16 inches high, and costs $30.00. J. H. Carrington, Jr., of 1146 Broadway, N. Y., is the general agent.

A New Dressing for Wounds.—M. Marc Sée has invented a fresh dressing. He has tested it three times after excision of the breast, and speaks confidently of its success. When the operation is finished, the surface of the wound is powdered with bismuth, which arrests all oozing and favors cicatrization. It is then covered with layers of cellulose impregnated with carbolic acid, upon which is placed a thick layer of cotton wool; a tarlatan bandage is then placed upon it, and an india-rubber one is superposed.

Before the dressing is completed, M. Sée places sutures both deep and superficial, and drainage-tubes which are easily removed by means of a thread which is attached to them.—*Brit. Med. Journal.*

Subsulphate of Iron (*Monsel's salt*) is recommended by Dr. E. T. Williams as a very serviceable mineral astringent in the summer diarrhœa of children, in doses of one grain, combined, if need be, with one-twelfth of a grain of opium, in powder for a child a year old. Adults can take from three to ten grains, and pills may be used instead of powder. The salt may be prepared by evaporating to dryness the officinal solution of the sub-sulphate.—*Boston Med. and Surg. Jour.*

The Value of Popular Disinfectants.

DRS. GEO. M. STERNBERG and J. R. DUGGAN, of the American Public Health Association, have lately reported the results of their tests of the various commercial disinfectants; "broken-down" beef-tea, containing spores of *bacillus subtilis* and *bacillus anthracis*, being the agent used for the measurement of their power.

DISINFECTANTS TESTED.

Name upon label.	Per cent in which active.	Per cent in which failed.
Little's soluble phenyle....	2	1
Labarraque's solution.....	7	5
Liquor zinci chloridi (Squibb's).....	10	7
Feuchtwagner's disinfectant.....	10	8
Phenol sodique.....	15	10
Platt's chlorides.....	20	15
Girondin disinfectant.....	25	15
Williamson's sanitary fluid	25	20
Bromo chloralum.....	25	20
Blackman disinfectant....	30	20
Squibb's solution of impure carbolic acid (about two per cent).....	..	50
Burchardt's disinfectant...	..	50
Phenol sodique.....	..	50
Listerine.....	..	50

Regarding these disinfectants, Dr. Sternberg adds: "Returning to the disinfectants in our list, it will be seen that all but the four last-named are efficient in various amounts, ranging from 30 to 2 per cent. But the relative value of the agents as here given does not establish their comparative practical value as disinfectants. Questions of cost, physical and chemical properties, etc., come into the account which it is the province of other members of our committee to consider. The agent at the head of the list, for example, notwithstanding its superior germicide power, does not seem to me to be as useful as some of those below it, on account of its insolubility and comparatively high price.

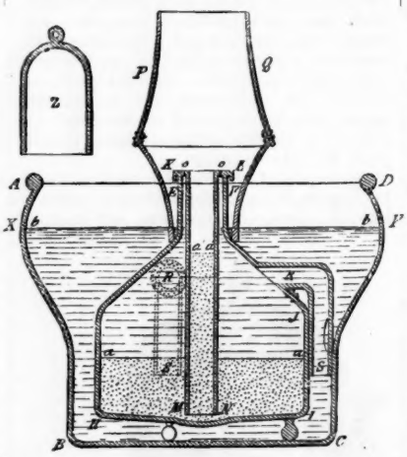
"We have nothing to say against the use of any of the agents in our list as antiseptics or as deodorizers. No doubt all of them are more or less useful for this purpose, and we have no desire to restrict their use. But the exaggerated claims made in relation to the germicide or disinfectant power of certain of these agents may do immense harm."

The time-honored Labarraque's solution receives much commendation from the committee. Dr. Duggan, as the result of a special examination of the hypochlorites, finds that a solution containing 0.25 of 1 one per cent (1 part to 400) of chlorine as hypochlorite is an effective germicide, even when allowed to act for only one or two minutes, while 0.06 of 1 per cent (6 parts to 10,000) will kill spores of *B. anthracis* and *B. subtilis* in two hours.

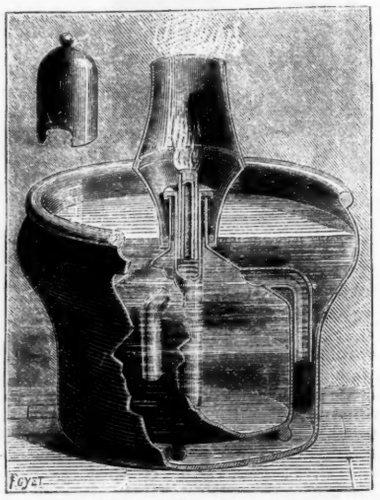
He adds that "the value of the various commercial preparations, such as Labarraque's solution and bleaching-powder (chloride of lime), of course, depends on the amount of available chlorine they contain, since the chlorides and chlorates are of very little value as disinfectants. Bleaching-powder usually contains from 25 to 40 per cent of available chlorine. For most purposes a solution containing 1 part of this preparation to 100 of water is strong enough, for this will contain from 0.25 to 0.40 of 1 per cent of chlorine as hypochlorite. As is stated above, the smaller of these quantities is sufficient to destroy spores almost instantly. There are very few purposes to which disinfectants are applied that are not fulfilled by this solution of 1 to 100 of bleaching-powder. It is not poisonous, does not injure clothing, bedding, etc., and is almost without cost, since bleaching-powder is worth only about five cents per pound. The sodium salt furnishes in some respects a more elegant preparation, since it leaves on evaporation sodium chloride instead of the hygroscopic calcium chloride. If prepared according to the United States Pharmacopœia, it does not keep very well, but when made by passing chloride gas into a solution of an excess of caustic soda, it shows very little tendency to decompose.

DISULPHIDE OF CARBON BURNER FOR DISINFECTION.

IN the near future there is likely to be a demand for efficient modes of disinfection, and in continuation of what we have already said on this subject (See NEW REMEDIES, 1879, 347; 1882, 305, and AMERICAN DRUGGIST, 1884, 64, 217, 238, we reproduce here descriptions of some forms of apparatus lately described in *La Nature*. The burner invented by Mr. Ckiandi-Bey avoids any danger arising from the volatile character of carbon disulphide, when it is



used as a source of sulphurous acid, for which purpose it is well adapted. The external container, A, B, C, D,



Ckiandi's disulphide of carbon burner.

is formed of tinned-copper. An inner vessel, I, H, E, F, has connected with its walls three siphons, R, S. A cylindrical tube K, L, M, N, is placed within the inner vessel, and disulphide of carbon is poured into it until it reaches the point *aa*. Water is now poured into the outer vessel until it reaches to the line *bb*. Through the siphons the water enters the inner vessel and forces the heavier disulphide of carbon up in the cylinder to the point *a' a'*, when it is absorbed by a wick of cotton which is then lighted. The upper extremity of the tube is surmounted by a chimney, P, Q, which serves to increase the draft. By pouring enough water into the outer receptacle to raise the surface above *bb*, or by using less water in the outer receptacle, the pressure on the disulphide in the lamp can be increased or diminished and the rapidity of its combustion varied, as may be desired. The lamp having been placed in the room to be disinfected, and the wick lighted, the room is vacated, all openings tightly closed, and the apparatus is left to take care of itself. When all of the disulphide has been burned, it is replaced by the water, and the flame is extinguished.

When disulphide of carbon is thus used, two and a half kilogrammes of the substance costing (in France) 1.25 francs, will disinfect 100 cubic mètres of space. The apparatus itself now cost 50 francs, and is practically indestructible by proper use.

Not only may the apparatus serve for disinfection, but it may likewise be employed for the bleaching of fabrics, sponges, straw hats, etc., and the method is, in many respects, superior to that which consists in the combustion of sulphur.

Lakmoid, a Substitute for Litmus.

BY heating resorcine with a small quantity of sodium nitrate and water to a temperature not exceeding 150° C., M. C. Traub and C. Hock have obtained a deep blue substance, soluble in water, and which showed such a remarkable resemblance to litmus in all the reactions tried with it, that the authors have given it the temporary name of "lakmoid" (from "lakmus," the German word for litmus).

Lakmoid is best prepared by gradually heating together in a glass flask, over an oil bath, 10 parts of resorcine, 1 part sodium nitrite, and 1 part water up to 120 C., which temperature is maintained until ammonia ceases to be evolved and the contents of the flask have become blue. The fused mass is then dissolved in 10 parts of distilled water, and treated with an excess of hydrochloric or acetic acid. The precipitate which ensues is collected on a filter, washed with distilled water, and when dry, dissolved in 100 parts of absolute ethyl or amyl alcohol. This solution is filtered, and the filtrate dried in an atmosphere free from ammonia, for which purpose a desiccator containing sulphuric acid is the most suitable. Thus prepared, lakmoid exhibits lustrous, reddish-brown laminæ, readily soluble in alcohol, glacial acetic acid and phenol, but sparingly soluble in ether and pure water. The best solvent for lakmoid as an indicator consists of a mixture of equal parts of water and alcohol of 96 per cent. 5 parts of lakmoid and 100 parts of the solvent being the most suitable proportion. The solution, which is of a fine red color, immediately turns blue on the addition of a trace of any alkali.

In its behavior towards reducing agents, and when examined by the spectroscope, lakmoid likewise shows a great resemblance to litmus, and the authors are inclined to believe that it is identical with that substance. They are engaged in further researches on the subject.—*Ber. Deutsch. Chem. Ges.; Chem. & Drugg.*

Decoction of Valerian is recommended as a sedative application for contused wounds by Dr. Martel, of San Malo. He uses 40 grams of valerian root to a litre of water, boiled for half an hour, strained, and *ten per cent of carbolic acid added to it.* [The latter is well known to possess the property of relieving pain when applied locally, and it may be an important element in this connection.—ED. AM. DRUG.]

Antipyrin, which now sells in New York at from 20 to 30 cents per drachm, is said, by Dujardin-Beaumetz, to be sometimes found adulterated, in France, with quinine and sugar. [This statement does not apply to the article as sold in *original* packages by the authorized agents.—ED. A. D.]

Chloroform Water.

In a recent editorial article in the *Boston Medical and Surgical Journal*, the writer refers to some recent uses for this old remedy (first formularized by Guillot, in 1844), and says that it is not only a handy excipient for many medicines, but possesses valuable analgesic properties. It is a stable preparation, and the savor is especially agreeable, sweetish, and, when diluted one-half, devoid of all piquancy and acridity; it makes a good combination with nearly all medicines which it is desirable to administer in a liquid menstruum, disguising the insipid or unpleasant taste of many of them; it markedly enhances the sedative and anodyne properties of analgesic and narcotic remedies. Lasègur especially recommends chloroform water as a suitable vehicle for the administration of morphine, in union with which it forms one of the best palliative cough medicines, as is generally acknowledged, in advanced phthisis.

Probably no better excipient for the salts of iron can be found. The mode of preparation is very simple: Into a flask two-thirds full of pure water pour an excess of chloroform, agitate the mixture well several times for the space of an hour, and allow the chloroform to deposit itself on the bottom of the flask. Decant or siphon off the clear, supernatant liquid. The solution should be perfectly transparent, containing a little less than one per cent of chloroform. For internal administration it is generally desirable to dilute this saturated solution with an equal quantity of water; the dose of the dilute *Aqua chloroformi* being about a desertspoonful.

Among the therapeutic advantages of chloroform water is one on which Lasègur and Beurmann much insist, viz., its use an analgesic in painful stomach affections, whether these proceed from indigestion or organic disease. In the pains of indigestion it is almost without a rival, speedily mitigating the functional distress by its marvellous topical sedative action. In the painful intestinal disorder often accompanying the completion of digestion, it is of no utility. Beurmann has had favorable experience with its employment in allaying the acute suffering and nausea which attend dilatation of the stomach, especially during the digestion of food. He also strongly recommends it in cases of gastralgia. Lasègur also finds advantage in the use of it in the pains and nausea of cancer of the stomach. Beurmann gives a number of formulas, among which are the following:

	Parts.
Saturated Chloroform Water	13
Peppermint Water	3
Water	12

M. Dose a tablespoonful. Good in nervous vomiting and vomiting of pregnancy.

	Parts.
Hydrate of Chloral	1
Syrup of Orange-peel	25
Saturated Chloroform Water	50

M. Dose a tablespoonful. The acrid taste of the chloral is much modified when thus administered.

	Parts.
Saturated Chloroform Water, Peppermint Water, āā	50
Syrup of Poppies	1
Bromide of Potassium	1

M. Teaspoonful doses when administered to infants.

	Parts.
Salicylate of Sodium	8
Syrup	30
Peppermint Water	20
Dilute Chloroform Water	100

M. The disagreeable taste of the salicylate is almost completely disguised in this mixture.

Lasègur recommends as a hydrogogue cathartic

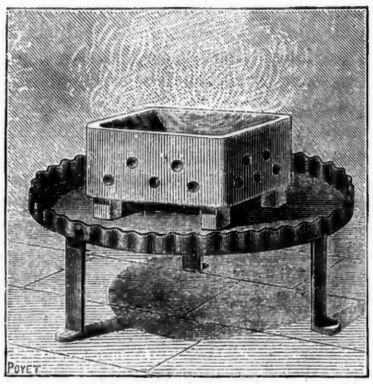
	Parts.
Gamboge	1
Syrup of Orange	50
Saturated Chloroform Water	100

Of which a tablespoonful may be taken every morning or on alternate mornings.

Phenol-Camphor.

Dr. Theodore Schaefer, of Beecher, Ill., says that he first noticed, in Dec., 1882, the fact that, when crystallized carbolic acid is liquefied by means of heat, and camphor is gradually added, a permanent liquid is obtained which is colorless, refractive, possesses the odor of camphor without a trace of that characteristic of carbolic acid, and has a sweetish, camphoraceous, but biting taste, not so caustic as that of carbolic acid, but somewhat benumbing to the tongue. It is soluble in alcohol, ether, chloroform, and ethereal oils, but is insoluble in water, and is heavier than the latter. It burns with a smoky flame, and possesses the advantage over carbolic acid of being less irritating and caustic, and of having a pleasant odor.

Dr. Schaefer has used it successfully for lessening the pain of toothache and ingrowing toe nails, and as a local application in certain parasitic skin affections.—*Boston Med. and Surg. Jour.*



Pasteur's Sulphur-burner.

APPARATUS FOR BURNING SULPHUR.

Mr. Pasteur has suggested for purposes of disinfection a very simple and effective apparatus for the combustion of sulphur, which is described in *La Nature* and consists of a rectangular vessel of fire-clay twenty centimetres wide and twenty-five centimetres long, the sides of which are perforated, in the manner shown in the illustration. This rests upon an iron pan with feet, which support it at a safe distance from the floor, and for further security a layer of sand may be interposed between the furnace and the pan. In order to obtain complete combustion of the flowers of sulphur, care should be used to secure equal combustion over the entire surface. This may be accomplished by first moistening its surface with alcohol, which when lighted will ignite the sulphur.

Trypsin as a Solvent of the Diphtheritic Membrane.

Dr. B. M. Van Syckel, New York, recommends a trial of trypsin as a topical application in diphtheria. Trypsin is one of the ferments of the pancreatic fluid. It will dissolve its own weight of fibrin in from five to ten minutes at a temperature of 37° Celsius (98.5° F.). It has been successfully employed as a solvent of the false membrane in diphtheria by Drs. J. Lewis Smith, of New York, and J. A. Keating, of Philadelphia, and at present several gentlemen are engaged in clinical experiments to determine its value for this purpose. The solution is to be applied by means of the spray, applications being made every fifteen minutes if possible, or as often as the strength of the patient will permit, only a small amount of the liquid being used at each spraying. The following extemporaneous preparation has been found very serviceable in the writer's hand: 50 C.c. (1¾ fluid oz.) of a 1 to 1,000 solution of salicylic acid may be added to 5 Gm. (77 grains) of "extractum pancreatis," and the mixture allowed to digest in a water-bath at a temperature of 37° Celsius (98.5° F.) for four hours, then filtered and made slightly alkaline by the addition of bicarbonate of soda. The solution should be made only as required, as it will not keep more than one or two weeks. —*Medical Record.*

Toothache Remedies.

Dr. J. R. Irwin writes to the *North Carolina Med. Journal* that one of the best and most pleasant things that can be used to relieve this painful state of the dental nerves is chewing cinnamon bark. It destroys the sensibility of the nerves and suspends the pain immediately, if the bark is of good quality. "After repeated trials, and in different cases, I am convinced that it is generally as efficacious as any of the other remedies suggested for odontalgia, and not attended with the unpleasant consequences of creasote, carbolic acid, etc., which relieve the pain, but leave the mouth as sore and painful as the tooth was previously, though these results are usually due to carelessness in using."

[For several years the editor of the Am. Druggist has been aware of the value of a toothache remedy still more easily obtained and equally efficacious in many cases, viz., a teaspoonful of bicarbonate of sodium in half a glassful of water, to be used at short intervals as a mouth wash. This is equally serviceable in relieving the sensitiveness of the teeth and gums of those who are obliged to undergo dental operations.]

Saccharated Oxide of Iron.

Dr. G. L. Walton, in exhibiting before the Suffolk District (Boston) Medical Society a specimen of this compound, which is chiefly used in Germany, remarked that it is a brownish-red powder, of a very agreeable, sweet taste, completely soluble in five parts of water, and containing three parts of metallic iron. It does not discolor the teeth, and, on account of its ready solubility, may be taken for an indefinite time without affecting digestion, even in cases in which iron is otherwise illy borne. Five to twenty grains may be taken daily in water, powder, or in tablets. Certain precautions needed in its preparation had been pointed out by Herr Blaser, a Leipzig pharmacist, and may be found in the *Boston Med. and Surg. Jour.* for January 12th, 1882. It is in many ways, and especially as regards appearance and solubility in water, much superior to the saccharated carbonate of iron. —*Boston Med. and Surg. Jour.*

Chemical Adulteration of Food.—Dr. Cyrus Edson, of New York, lately spoke at a meeting of public analysts of the decomposition of gelatin used to adulterate currant jelly, and of the use of chemicals in the curing of meats and the preparation of headcheese and sausage. In the latter, borax, boric acid, nitrate of potassium and phospate of potassium are employed to such an extent to prevent decomposition, that there is often a full medicinal dose in each meal made on them.

THE

American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XIV., No. 4. WHOLE No. 130

FRED'K A. CASTLE, M.D., - EDITOR.
CHAS. RICE, PH.D., ASSOCIATE EDITOR.

PUBLISHED BY
WM. WOOD & CO., 56 & 58 Lafayette Place, N.Y.

APRIL, 1885.

SUBSCRIPTION PRICE per year, - - - - $1.00
SINGLE COPIES, - - - - - - - - - - - 10

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed to THE EDITOR OF AMERICAN DRUGGIST, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

The AMERICAN DRUGGIST is issued on the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

ELECTROTYPES of the illustrations contained in AMERICAN DRUGGIST will be furnished for 50c. per square inch.

EDITORIAL.

THE series of papers on drug-store architecture and arrangement, which has appeared in this journal for several months, seems to have interested a large number of our readers, if we may judge from the communications which have been addressed us on the subject. It is already evident that a very general desire has been felt to do something in the way of window decoration and interior arrangement which shall differ from conventional methods and give a store something of an individual character.

Letters, such as have already been received, containing criticisms of the designs published, comments of a practical nature, or giving the results of attempts to utilize our suggestions, will be very acceptable.

ALREADY some of our readers, who have taken hints from the papers by Messrs. Bendiner and Remington, have had the satisfaction of experiencing an awakened interest on the part of the public as to what is going on in their places of business, and they have a feeling that, after all, there may be a way of salvation not provided for in the "Campion Plan."

ONE correspondent sends us a clipping from his local paper, in which the reporter concludes his description of "the new departure from the sterotyped style of soap and soothing-syrup decoration in the drug-store windows" with the stanza:

"This wise you know more
Than you did before,
Without bothering the clerk
Or buying the store,
Or turning the knob
On the big front door."

The letter which accompanies this extract was received too late to appear in this number, but it will be inferred from its contents that the front door has not had so quiet a time as the poetical license of the reporter would imply.

IN preparing this series of papers, we have been fortunate in receiving the assistance of writers and draughtsmen well qualified to handle the subject in an artistic manner, and at the same time able to utilize the practical suggestions offered by those who are especially familiar with the requirements of a retail pharmacy.

It is hardly to be expected that we can be able to suggest schemes for decoration and arrangement which will suit all establishments. So much depends upon the size and location of the store; arrangements for lighting; special requirements of the business, the available cost, etc., that special designs may be needed in each case. We have intended to offer suggestions which might be *generally* applicable and which should be considered in the choice of any plan.

IN succeeding papers we shall describe some of the stores which may serve as notable examples of ingenious arrangement or beautiful design, and for the illustrations which will accompany them we are greatly indebted to the architects who have placed their working plans at our disposal, and supplied us with original drawings made expressly for our use.

THE article on this subject contained in this number is rendered especially attractive by the beauty of the large illustration on the first page, made for us by Mr. Arnold W. Brunner, Architect, of 29 Union Square, in this City, who has devoted considerable attention to the subject of store-architecture.

THE following markings obtained by the gentlemen who graduated highest at the commencement of the New York College of Pharmacy shows a very creditable degree of proficiency; the highest possible total being 483.

Albert H. Hamilton, 473 (Gold Medal); Albert M. Roy, 470 (Silver Medal); Dudley T. Laremore, 464 (Bronze Medal); George E. Schweinfurth, 460; Daniel Desbecker, 459; George Oberdœrfer, 456; Alexis V. Moschcowitz, 446; Bryan E. Miot, 445; Samuel Brothers, 439; Herman Herzfeld, 439; Thomas P. Murphy, 439; Maurice Schlesinger, 439; Otto Maier, 436.

Mr. Hamilton also won the pharmaceutical balance (Bedford Prize) as the prize in pharmacy (199 out of a possible 205), and Mr. Roy the Botany prize of a microscope (146 in a possible 156).

THE removal of the sections relating to Adulterations and the sale of poisons from the Michigan Pharmacy Bill has been done, it is said, to enable the bill to be passed. This is a somewhat remarkable statement in view of the fact that in other States, where pharmacy laws have been enacted, these clauses are the ones which have been used to make the measure popular. The promoters of these bills have argued that only those who are well educated in pharmacy should be allowed to sell poisons, and that only those who are educated to the business are to be trusted in the sale of articles which are very liable to adulteration, since their superior skill will insure to the public the purity of their wares. On these grounds Legislatures have been asked to pass laws in the interests of the public to regulate the practice of pharmacy.

Aniline Marking-Ink.—Dr. E. Jacobsen gives the following formula for a preparation which, according to him, comes into trade under the name of *Jetoline*:—Solution 1: Crystallized copper chloride, 8.52; sodium chloride, 10.65; ammonium chloride, 5.35: water, 60. Solution 2: Aniline hydrochlorate, 20; distilled water, 30; gum solution (1 in 2), 20; and glycerin, 10. Four parts of No. 2, with 1 part of No. 1, yield a greenish fluid, which can be used at once to mark linen, but the compound will not keep more than a few days.

Iodoform Gauze, preferable to Billroth's or Bruns' is made by Dr. Heidenreich by soaking ordinary gauze in a solution of 6 parts of colophony and 2 parts of castor oil, in 100 parts of 94 per cent spirit, and subsequently impregnating it with 20 to 100 per cent of iodoform. This gauze is soft, non-adhesive, and of constant composition.

Chloride of Lime was formerly used in gonorrhœa, but quite lately has been very warmly recommended as an injection in old cases of gleet after all the inflammatory symptoms, especially the pain, have subsided. The amount of secretion which may be present is a matter of no importance. Nothnagel says his experience with it has been favorable, in solutions of five to ten per cent.

Oleoze.—The German preparation called oleoze, so great a favorite in disguising unpleasant remedies and making most compounds pleasant to smell and taste, has the following composition: One part each of the oils of lavender, cloves, cinnamon, thyme, citron, mace and orange flowers, three parts balsam of Peru, and two hundred and forty parts of spirits.

Synthesis of the Alkaloids.*

THE vegetable bases (alkaloids) at present occupy a prominent place in chemical research. Investigations on alkaloids and allied substances are being conducted in most scientific laboratories, and new discoveries, throwing more and more light upon the subject, are brought forward in short intervals.

Alkaloids, of which scarcely more than their chemical formula was known a few years ago, are constantly drawn within the circle of those whose chemical constitution becomes better understood ; and from the moment when the latter is recognized beyond a doubt, a way will be found for their artificial preparation. Both among professionals and among lay persons the impression appears to prevail that this manufacture of alkaloids on a large scale, from purely chemical (not botanical) sources, may be expected daily to become an accomplished fact. How deep-seated this opinion is, may best be recognized from the fact—an open secret, indeed—that no sooner has the synthesis of an important alkaloid been accomplished, the large factories of artificial organic colors at once proceed to carry it out on a commercial scale, for which they are equipped with unsurpassed means, able brains and hands, and rich experience. It will, therefore, be of advantage to examine whether the hopes and expectations before alluded to are justified, and what influence the researches at present being conducted may have upon the realization of these hopes.

There is scarcely any doubt that each chemical substance existing in the vegetable kingdom may be prepared artificially. For those who are not in the habit of following the theoretical speculations of the new school of chemistry, the history of artificial alizarin, indigo blue, vanillin, cumarin, etc., will render the above statement acceptable. Yet the artificial preparations of these substances, except in accidental cases, cannot be thought of or undertaken until the investigation of their constitution is completed, just like a house, of which no plans are in existence, can only then be exactly reproduced when it has been most minutely measured and sketched in all its details. And as it is easier to accomplish this in the case of a dwelling house of simple construction than in the case of a monumental building, with a labyrinth of rooms and intricate construction, in the same manner the recognition of the constitution of an organic body becomes so much the more difficult the more complicated it is, or, in other words, the more possibilities there are for the arrangement of the atom-groups or radicals in the molecule; or, to use a chemical expression, the more isomers of it there may be theoretically possible. Undoubtedly, the constitution of most alkaloids is much more complicated than that of vanillin or alizarin, and this is the principal reason why the artificial preparation of the latter has preceded that of the former.

Already in the beginning of this century Sertürner made the important discovery that the effects of opium depended mainly upon a crystallizable constituent (morphine), which was remarkable from the fact that it in many respects resembled the caustic alkalies, and therefore appeared to be a "vegetable alkali." This observation led to the discovery of alkaloids in many other plants of medicinal importance or toxic properties, and shortly afterward to the manufacture of the same on a large scale from their native sources. It will be unnecessary here to dilate upon the importance of this discovery for medicine and for pharmacy.

Numerous chemists subsequently occupied themselves with the task of working out the chemical constitution of the alkaloids; and this investigation acquired still more interest when the classic researches of Wurtz and Hofmann showed that similar organic bases could be prepared artificially. Hofmann's discovery particularly led to the recognition of the relationship between the alkaloids and ammonia, inasmuch as the former could be regarded as primary, secondary, and tertiary amines.

During the more recent period, in which were laid the foundations of modern chemistry, the alkaloids received but little attention, for very obvious reasons. In the first place, while searching for facts illustrative or confirmatory of modern chemical theories, the study of such complicated substances as the alkaloids proved unsuitable; and afterwards, when the foundation for their more rational study had been laid, other fields offered such fruitful channels upon which new discoveries could be made almost without an effort—particularly the so-called aromatic substances, and the artificial coloring matters which are even now by no means exhausted—that but few workers remained for the study of the alkaloids, and the most important ones were altogether neglected.

Since it has been ascertained that *all true alkaloids contain nitrogen*, it becomes a cardinal question what rôle the nitrogen plays in them, and what nitrogenized group or radicals occur in them. Yet, on this very point, scarcely anything has been learned up to the most recent time.

It is certain that the great difficulties occurring in the investigation of alkaloids will be surmounted, but much labor will yet be necessary, and many a year will elapse before a sufficient insight will have been gained in the subject.

And even after the scientific synthesis of alkaloids has been accomplished, *their technical manufacture still remains problematical*, for the following reasons :

It is not impossible, and in many cases quite probable, that the crude materials requisite for the artificial manufacture will be so difficult to obtain, or so laborious to transform, that the manufacture would be profitless, so much the more since every effort will be made to destroy this competition by an increased cultivation of the natural source, the medicinal plants and trees.

Another point is the following: We know by experience that those organic compounds, which deflect polarized light and which are obtained from the plants themselves, are devoid of the property of deflecting polarized light when they are prepared artificially. The cause of this would seem to be this, that during the synthesis or artificial preparation there are produced two optically-opposed, but otherwise isomeric, substances; the optical power of one is neutralized by that of the other. In many cases, as for instance, in that of artificial tartaric acid, the separation of the optically active portion has been successfully accomplished, but yet it has been, and is still, very troublesome.

Now the vegetable alkaloids are likewise optically active substances, and when they are once prepared artificially it would be a wonder indeed if there would not be obtained optically inactive mixtures of alkaloids of opposite optic power, the separation of which would be difficult, but probably unavoidable.

The chapter, however, which is here opened has more gaps than contents, since we possess scarcely more than hints regarding the remarkable relations between optic activity, chemical constitution, and physiological effects. Hence it may be for the present, with equal justice, asserted or denied, that the inactive artificial alkaloid will be found to have the same therapeutic effects as the active one prepared from the plant.

Judging from what has been said so far, we may conclude that many more experimental investigations than can even now be guessed at, will be necessary in the future, and that the scientific solution of the problem does not necessarily imply the realization of the same in practice.

Nevertheless, it may be asserted with confidence that the experimental investigations thus conducted will redound to the general benefit of chemistry at large.

The results so far obtained with natural alkaloids have caused the preparation of certain new artificial remedies.

When it had been ascertained that *quinine* was a derivative of the so-called *para-oxy-chinoline*, various other chinoline (or quinoline) derivatives were tested physiologically, and in a few of them, such as kairine, antipyrin, and recently thallin, strong antipyretic properties were discovered. The synthesis of atropine from its decomposition products made it possible to prepare other atropines artificially, so that our medical armamentarium has already to some extent been enriched in this manner.

Many alkaloidal substances will no doubt be discovered and prepared in the years to come. Just in proportion as their constitution will be more and more known, it will be imitated with more or less variations, and many of them, perhaps the most, will have only a chemical interest. But there will undoubtedly be some which will be found medicinally active, and finally some will be obtained which even excel the natural alkaloid in many respects.

It is quite possible that, in place of each one of the more important alkaloids, we shall obtain several artificial bodies which are possessed of specific properties in certain diseases, and even if the synthesis of quinine and morphine should not be accomplished, and only one of the results above foreshadowed be obtained, an immense boon would be contributed upon mankind.—*Pharm. Post.*

* Original translation and abstract from the original, by Prof. Dr. Zd. H. Skroupt, of Vienna. The author is well known as one of the most successful investigators upon the field of organic chemistry, and more especially upon that which seeks to elucidate the constitution of the alkaloids (quinine, cinchonine, etc.), and to pave the way for their future artificial manufacture.—ED. AMER. DRUGGIST.

To Secure a Dead Black Surface on Brass Work.

DISSOLVE copper wire in nitric acid, diluted by (say) three or four parts of water to one of acid. The article to be blackened is heated pretty hot and then dipped into the solution. It is then taken out and heated over a Bunsen burner or spirit lamp. When the article is heated to the proper temperature, the green color of the copper first appears, and as the heat is increased the article becomes a fine dead black. It is not necessary to lacquer it ; it is better not to do so, only giving it a good brushing to remove the dust, and it may be considered finished. If, however, it is given a single coat of lacquer the color becomes blacker, but there should not be sufficient put on to make the surface glisten.

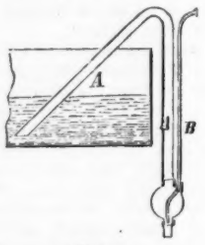
To find the number of bricks in a wall, first find the number of square feet of surface, and then multiply by 7 for a 4-inch wall, by 14 for an 8-inch wall, by 21 for a 12-inch wall, and by 28 for a 16-inch wall.

ROTARY CAPSULE HOLDER.

In some manufacturing establishments a large number of volumetric assays have to be made each day, and special arrangements or devices are usually resorted to in such cases for the purpose of saving time. One of these, which is particularly useful where only a few standard test liquids are to be used, but the number of samples is large, is shown in the illustration. The central frame which carries the three reagent bottles is stationary, but the table *s* upon which the capsules are placed is rotary (see Fig. 2), with holes near the periphery for the capsules to sit in. This apparatus was specially designed for beet juice assay, and it therefore has several additional attachments, as for instance the arms *c c* for carrying funnels, and the waste-funnels *u u u*, which are not generally necessary. But the principle is a good one and may be utilized to advantage.

A NEW FORM OF SIPHON.

A very convenient form of siphon, at least so far as the principle of starting it is concerned, is illustrated here. Into a globe of metal, or, better, of glass, a small tube is introduced through a lateral opening, and the lower end of this tube, drawn out to a point, is made to enter a short distance into the outlet from the globe. The latter is connected with a common siphon of suitable dimensions. By blowing into the small tube, and the rush of air passing down the outlet pipe, the air in the legs of the siphon



Siphon.

becomes sufficiently rarefied to cause the liquid to flow over. This siphon is the invention of Jaime Puig y Moré of Barcelona, and has been patented in Germany.

Testing Cod-Liver Oil.*

An apothecary in an Austrian city had charged his competitor with selling a bad quality of cod-liver oil, inasmuch as the latter had a straw-yellow color, while the officinal oil is directed to be golden-yellow, according to the Austrian Pharmacopœia. Both oils were sent to me for report and I found that the sample of oil from the defendant was the first quality of "steam cod-liver oil," while the sample of the complainant turned out to be second quality. The fact that the complainant did not reflect that the Austrian Pharmacopœia appeared over ten years ago when the straw-yellow steam oil did not yet exist, again shows how necessary it is that the apothecary should keep abreast of the progess of the times, both scientifically and practically, if he intends to preserve the honor of his profession.

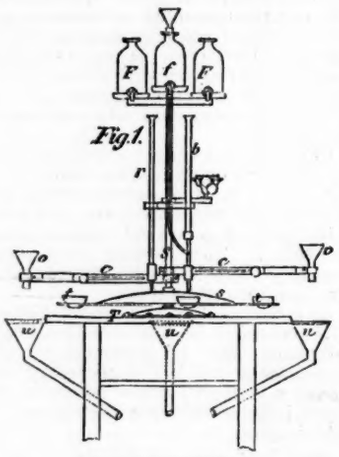
For the purpose of the examination, I had procured cod-liver oil from various sources, so as to enable me to make comparative reactions. Accordingly I found that good cod-liver oil is either wholly devoid of free fatty acids, or contains at most only a faint trace thereof. In the second quality of oil, the quantity of free acid does not exceed one-half per cent ; but the more free fatty acid is present, the more it depreciates the value of the oils.

It follows from this, that Jacobsen's test with rosaniline is merely an identity reaction for inferior qualities, that is, the more rosaniline a certain cod-liver oil is able to dissolve the more free fatty acid does it contain ; for if not more than one-third per cent of free acid, or none at all is present, the oil does not dissolve a trace of rosaniline. At one time this reaction was put forward as a test for good cod-liver oil, but at the present day, when good cod-liver oil has ceased to contain more than a trace of free acid, any oil should be rejected which dissolves rosaniline.

Since an oil containing soap likewise dissolves rosaniline, this reaction might be regarded as an indication that a sample of acid-free oil has been subjected to an artificial neutralization.

The following tests were performed with 8 samples of cod-liver oil obtained from various sources :

1. Two to 3 C.c. of the oil are mixed with 4 or 5 drops of tincture of litmus, and the mixture is thoroughly shaken. Steam cod-liver oil of first quality does not alter the blue tint in less than one hour. Second quality or yellow cod-liver oil of best quality becomes red within ten minutes, while



Rotary Capsule Holder.

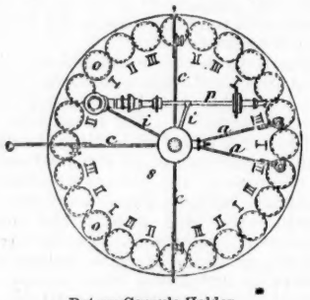
inferior sorts at once change the blue litums to red. According to the quantity of acid present, the taste is more or less mild or biting : cod-liver oil free from acid has an exceedingly mild taste. The old statement that good cod-liver oil should have an acid reaction is no longer valid, since the best quality of steam oil has proved to be absolutely free from fatty acids.

2. The reaction with concentrated sulphuric acid is indispensable to prove identity, although there are some adulterants (mineral oils, some rape oils), which are not affected by it. The test is performed as follows : about 2 C.c. of chloroform and 8 to 10 drops of the cod-liver oil are put into a test-tube, and 2 drops of concentrated sulphuric acid then added. On agitation, the mixture acquires a light violet-blue color, becoming darker in a few seconds, then of the color of permanganate, finally brownish-red to brownish-black. The German Pharm. (also the U. S. Pharm.) directs disulphide of carbon to be used in this test, instead of chloroform.

3. Into a test-tube of the diameter of a finger, 1 volume (2 C.c.) of concentrated sulphuric acid, and 2 volumes (4 C.c.) of the oil are poured, and the mixture agitated. After standing three to four hours, and becoming cold, the darker mixture appears as a rather stiff salve-like mass. If foreign oils are present, the mass does not have the consistence of a salve, but is thick-fluid, or about of the consistence of vaseline.

4. The elaidin test, with nitric acid of spec. grav. 1.185 and a few turnings of copper furnishes equal results with all genuine cod-liver oils. Neither are there any special color tints produced during the reaction, nor is anything separated after two to three days, even at a temperature of 7 to 10° C. The elaidin or oil layer is yellow with brownish-red tint, clear or but little opaque, and but little thicker than the oil itself. Any separate particles in the oil-layer indicate the presence of foreign fats.

5. To saponify the oil, about 15 C.c. of caustic soda solution, spec. grav. 1.160, are put into a glass flask, together with 7.5 Gm. of cod-liver oil, and 5 C.c. of water. The whole is mixed and brought four or five times to the boiling point under continual agitation. The flask should not be more than one-third full, as the mass foams considerably on boiling. It is now poured into a wide test-tube, and the latter put for a few hours first in a warm, afterwards in a cold place. The completely cooled mass, which is not completely saponified, forms two layers. The upper, soapy layer appears to be quite firm, when completely cold. But if the white, firm coat on the surface is removed, the main portion of the soapy layer below it is found to be translucent and almost colorless and liquid as oil. If foreign oils, resin, etc., are present, the soapy layer is not translucent and not liquid.



Rotary Capsule Holder.

Fig. 2.

6. An adulteration with vaseline-oil is somewhat difficult to prove chemically with dispatch. The spec. grav. would here be probably the best indicator, and for the expert, also, the "cork-friction test." The latter consists in this, that a cork covered with cod-liver oil if turned in the neck of the cod-liver oil bottle with gentle pressure, appears to meet with no resistance, nor produces a screeching sound if the oil was pure, while both of these phenomena would be encountered if a mineral oil was present. [We would certainly hesitate to rely upon this test. Our main reliance would be saponification of the oil with solution of potassa, and further examination of the oily matter not forming a soap.]

The spec. grav. of cod-liver oil varies between 0.920 and 0.930, being mostly between 0.922 and 0.925. If the spec. grav. is below 0.920 it is possible the oil is mixed with liquid paraffin, and would have to be specially tested for mineral oils, even though the "cork friction test" should be unaccompanied by any sound.

7. Boudard's nitric acid reaction is said to permit the recognition of other fish oils. I found it, however, to fail when only 10 or 15 per cent of the latter were present. It is as follows : About 2 C.c. of the cod-liver oil are mixed with 15 to 20 drops of nitric acid of spec. grav. 1.450–1.500 ; if the oil was pure, a fine carmin tint gradually makes its appearance. The same reaction occurs when concentrated nitric acid is added to a mixture of 1 part of the oil with 3 to 4 parts of

* Original translation from the original by H. Hager, in *Pharm. Centralh.*

chloroform. The red color may have a yellowish tint, but should not turn reddish brown or brown.

Fuming nitric acid should not be used in this test, since this acts upon the acid so energetically that it brings itto a boil and projects it from the test-tube.

8. An adulteration with resin [or resin oil] would increase the specific gravity, and upon saponification the soapy layer would not be translucent but opaque. By boiling and agitating the oil with a mixture of equal volumes of dilute [68 per cent by volume] and absolute alcohol [or, in other words, with alcohol of about 84 per cent by volume], the resin [or resin oil] could be separated from the cod-liver oil, and would be left behind on evaporation of the alcoholic solution. The sulphuric acid test would likewise furnish results different from those mentioned under § 2.

9. If cod-liver oil is attempted to be deprived of free acid by oxide of lead, it will retain some of this metal, which could be recognized by boiling and agitating the oil with dilute acetic acid, filtering the acidulous, aqueous layer through a wetted filter, neutralizing or supersaturating with ammonia, and passing hydrosulphuric acid through it, when black sulphide of lead would be separated. Cod-liver oil containing lead, when shaken with dilute sulphuric acid and then put in a warm place, does not produce, on standing, two equally clear layers, but both the aqueous and the oily layer will contain turbid particles. The formation of these layers requires a standing at rest for 24 to 48 hours and a temperature of about 25° C.

These tests will probably suffice to recognize all possible adulterations. Of the reactions formerly proposed, that of Jacobsen may be dispensed with, as it is only useful when it is desired to ascertain whether cod-liver oil contains too much free acid. The statement has also been made that cod-liver oil heated with caustic alkalies should not exhale an odor resembling valerian, which would be characteristic of ray-liver oil. Yet, even the best genuine cod-liver oil, when thus treated, yields an odor faintly recalling that of valerian. . . . Regarding the preservation of cod-liver oil, it is advisable to employ Appert's method. Suitable pint or quart bottles are filled with the oil to within 3 C.c. of the orifice, then heated in a water bath to 60° or 70° C., and while still hot, closed with good and dry taper corks in such a way that the cork displaces a portion of the oil and no air bubble remains in the bottle. When the contents have cooled to 20°–30° C., the corks are firmly driven in and cut off, and after the neck and end of the cork is thoroughly cleaned, suitably capped and labelled. The failure of removing every trace of oil from the outside will often result in the development of a rancid odor when the cap is taken off, and before the bottle is opened.—*Pharm. Centralb.*, Jan. 8th.

IMPERMEABLE MASKS.

For some time past, Galante & Sons, of Paris, well-known makers of surgical appliances, have made coverings for different portions of the body of vulcanized india-rubber, which have been recommended by Drs. A. Fournier, Guibout, E. Besnier, and others as serviceable in the treatment of certain forms of eczema.

It is the custom, with many ladies who desire to improve their complexion and to give to the skin of the face a color and transparency which may render them more attractive to their friends, to apply certain cosmetics at bed-time and cover the face with a mask of kid or chamois, which is worn until morning. We reproduce Messrs. Galante's illustration of their caoutchouc mask with the idea that some manufacturer of india-rubber goods in this country may find it worth his trouble to supply the market with something of this character. As it will be seen in the illustration, the mask should be modelled to fit the face, and should be made in three or four sizes. In choosing a cosmetic, if one is needed, it should be remembered that contact with fatty bodies causes india-rubber to lose its elasticity and become brittle. For this reason the paraffins or a magma of hydrated starch are preferable as bases.

Impermeable Masks.

The Estimation of Morphine in Opium.

In a paper read before the Am. Chem. Soc., Mr. J. Howard Wainright, of the U. S. Laboratory attached to the Custom House, gives an account of the method used by him for assaying opium, which is essentially that of Dr. Squibb (published in the *Ephemeris*) and which the author has modified in some minor details. He describes it as follows:

I have compared this method with the official one of the Pharmacopœia and also with others, upon a specially prepared sample of opium made up from selected specimens which were dried, powdered and thoroughly mixed. In four different parts of this sample the morphine was determined by Dr. Squibb's method and the average of the results obtained was taken as the percentage of morphine.

The following is a brief description of this method of assay as used in my own practice. It consists of three distinct operations, viz.: The preparation of the extract. 2d. Separating the morphine therefrom; and 3d, The treatment of the separated alkaloid.

1st. A convenient weight of the sample (preferably about 10 grammes) is introduced into an ordinary salt mouth vial of about 4 to 6 ounces capacity, fitted with a good cork. About 100 C.c. of *boiling* water is added, and the bottle is tightly corked and allowed to stand, after frequent hard shakings, from 12 to 24 hours. The magma is allowed to settle, and the dark extract is decanted upon a filter of convenient size. When most of this extract has run through into a medium-sized beaker, from 30 to 50 C.c. of boiling water is added; the bottle is well agitated, and the contents are then transferred to the filter with as little hot water as possible. When all the liquid has drained through the filter, it is carefully washed down with a very little hot water, applied drop by drop around the edges, and allowed to drain as much as it will. As soon as the liquid ceases to drop, the beaker is replaced by an evaporating dish of about 100 to 150 C.c. capacity, and the contents of the filter are brought back into the bottle by means of a small spatula, and again shaken up with about 50 C.c. of hot water. They are then thrown upon the same filter, and are washed completely upon the filter from the bottle, this washing being continued until about 100 C.c. have run through into the dish or until the washings come through colorless. The dish is now placed upon a water-bath, and the weak extract evaporated, adding to it from time to time the stronger portion from the beaker until the whole is concentrated to a volume of about 20 to 25 C.c. The concentrated extract is transferred with as little water as possible to a two-ounce Erlenmeyer flask accurately tared, and provided with a tight-fitting cork, and allowed to cool. It is now ready to be submitted to the second part of the process, viz., the separation of the morphine.

2d. After adding 10 C.c. of 95 per cent alcohol, the flask is agitated, and a volume of ether equal to that of the contents is added, the cork is tightly fitted, and the flask well shaken. The cork is now removed, and before the ether has had time to separate, a slight excess (about 4 C.c.) of a 10-per-cent solution of ammonia is added. The cork is again replaced, and the flask well shaken until crystals of morphine begin to separate. The flask is now set aside in a cool place, and the separation of the alkaloid allowed to continue for about 12 hours, when it will be complete. This complete separation may also be accomplished in from half an hour to two or three hours by continuous or frequent agitation. The alcohol is added in order to permit of the ether mixing readily with the aqueous extract, and thereby prevent the separation of narcotine, which is readily soluble in this menstruum.

3d. When the separation of morphine is complete, the cork is removed from the flask, and the upper stratum of ethereal fluid carrying most of the narcotine, etc., is carefully decanted through a tared filter of 9 Cm. diameter without disturbing the dark watery liquid in the bottom of the flask. Upon this dark liquid is now poured about 20 C.c. more ether, which is rinsed around the sides of the flask and the surface of the liquid, and is decanted carefully through the filter as before, that remaining being absorbed by means of a strip of blotting paper. The filter is washed down with a little more ether, applied drop by drop around the edges and allowed to dry, so that the heavy liquid, which is now thrown upon it, together with the morphine, will pass through readily. The crystals remaining in the flask are then washed upon the filter with cold water, and the washing continued until the water comes through colorless.

The filter and contents are removed from the funnel, and the edges having been carefully folded together, are pressed between folds of blotting paper until most of the moisture is absorbed. It is then dried in an air bath (together with the tared flask, if any of the crystals remain adhering to its sides) at a temperature of 100 C., and weighed, the result obtained, after subtracting the tare of the filter (and flask, if it has been found necessary to dry and weigh it), will be the weight of morphine in the sample taken. Dr. Squibb directs that 0.1 gramme of these

crystals, finely powdered, should be weighed off and treated in a large test-tube, fitted with a cork, with 10 C.c. of officinal lime-water; upon occasional shaking, the whole should dissolve, thereby showing the absence of narcotine. He also says that the filter should be tared both before and after weighing the crystals. This I think hardly necessary, as the coloring matter and gumming substances can be washed quite free from the paper and crystals without danger of loss of morphine if the water is quite cold. I have tried this repeatedly, and find that 50 C.c. of water used in washing will not make any great difference in the weight of the morphine. It is also my experience that the use of hot water in making the extract seems to work much better than cold; the final results of the assay, if carefully conducted, being about the same in either case, but the opium can be completely extracted with much less water in the former case, the resulting liquid filters much more readily, and the magma is much easier to wash.—*Journ. Am. Chem. Soc.*, VII., 48.

Determination of Phosphoric Acid.

ANALYSTS have for a long time been discussing the best methods of determining the quantity of phosphoric acid in complex compounds, such as fertilizers, phosphate liquids, etc., and as a result of their discussion, the Association of Official Agricultural Chemists have agreed upon the following uniform scheme, for the session of 1884-85:

1. The sample should be well intermixed and properly prepared, so that separate portions shall accurately represent the substance under examination, without loss or gain of moisture.

2. *Water Soluble Phosphoric Acid.*—Bring 2 Gm. on a filter; add a little water; let it run out before adding more water, and repeat this treatment cautiously until no phosphate is likely to precipitate in the filter. (The washings may show turbidity after passing the filter.) When the substance is nearly washed in this manner, it is transferred to a mortar and rubbed with a rubber-tipped pestle to a homogeneous paste (but not further pulverized), then returned to the filter and washed with water until the washings no longer react acid with delicate test-paper. Mix the washings. Take an aliquot (usually corresponding to one-third or one-half of a gramme of the substance), and determine phosphoric acid as under total phosphoric acid.

3. *Citrate Insoluble Phosphoric Acid.*—Wash the residue of the treatment with water into 150 C.c. flask with 100 C.c. of strictly neutral ammonium citrate solution of 1.09 density; shred and add the filter-paper; cork the flask securely; place in a water-bath with constant temperature of 65° C., and digest for thirty minutes with frequent shaking. Filter the warm solution quickly, and wash with water of ordinary temperature.*

Transfer the filter and its contents to a porcelain capsule. Ignite until the organic matter is destroyed; treat with 10 to 15 C.c. of fuming hydrochloric acid; digest over a low flame until the phosphate is dissolved; dilute to 200 C.c., mix; pass through a dry filter; take an aliquot, and determine phosphoric acid as under total.

4. *Total Phosphoric Acid.*—Weigh 2 Gm. into a capsule, add and mix intimately with 4 to 7 C.c. of a nearly saturated solution of magnesium nitrate, dry, ignite gently; if necessary, moisten the residue with nitric acid and ignite again to destroy all organic matter; add to the residue 15 to 20 C.c. of fuming hydrochloric acid; digest at a gentle heat until all the phosphates are dissolved; dilute to 200 C.c., mix; pass through a dry filter; take 50 C.c. of filtrate; neutralize with ammonia; add about 15 Gm. dry ammonium nitrate, and to the hot solution, for every decigramme of P_2O_5 that is present, 50 C.c. of molybdic solution. Digest at about 65° C. for an hour; filter and wash with ammonium nitrate solution. (Test the filtrate by removed digestion and addition of more molybdic solution.)

Dissolve the precipitate on the filter with ammonia and hot water, and wash into a beaker to a bulk not more than 100 C.c. Nearly neutralize with hydrochloric acid; cool and add magnesia mixture from a burette, slowly (one drop per second), and stirring vigorously. After fifteen minutes add 30 C.c. of ammonia solution of density of 0.96. Let stand several hours. (Two hours are usually enough.) Filter, wash with dilute ammonia; ignite intensely for ten minutes, and weigh.

5. *Citrate Soluble Phosphoric Acid.*—The sum of the water-soluble and citrate-insoluble subtracted from the total gives the citrate-soluble.

PREPARATION OF REAGENTS.

1. *To prepare Ammonium Citrate Solution.*—Mix 270 Gm. of commercial citric acid with 1,500 C.c. of water; nearly neutralize with crushed commercial carbonate of ammonia 410 Gms., heat to expel the carbonic acid, cool; add ammonia until exactly neutral (testing for excess both of acid and alkali by aid of delicate red and blue litmus papers), and bring to volume of two liters. Dilute further until the density is 1.09 as tested by the balance or *accurate* specific gravity spindle.

2. *To Prepare Solution of Magnesium Nitrate.*—Dissolve 320 Gm. of "calcined magnesia" in nitric acid, avoiding excess of the latter; then add a little "calcined magnesia" in excess, and boil; filter from the excess of magnesia, ferric oxide, etc., and bring to volume of 2 liters.

3. *To Prepare Molybdic Solution.*—Dissolve 100 Gm. of molybdic acid in 400 Gm. or 417 C.c. of ammonia of sp. gr. 0.96, and pour the solution thus obtained into 1,500 Gm. or 1,250 C.c. of nitric acid of sp. gr. 1.20. Keep the mixture in a warm place for several days, or until a portion heated to 40° C. deposits no yellow precipitate of ammonium phospho-molybdate. Decant the solution from any sediment, and preserve in glass-stopped vessels.

4. *To Prepare Ammonium Solution.*—Dissolve 200 Gm. of commercial ammonium nitrate in water, and bring to a volume of 2 liters.

5. *To Prepare Magnesia Mixture.*—Dissolve 22 Gm. of recently ignited "calcined magnesia" in dilute hydrochloric acid, avoiding excess of the latter. Add a little "calcined magnesia," in excess, and boil a few minutes to precipitate iron, alumina and phosphoric acid; filter, add 280 Gm. of ammonium chloride, 700 C.c. of ammonia of sp. gr. 0.96, and water enough to make the volume of 2 liters. Instead of the solution of 22 Gm. of "calcined magnesia," 110 Gm. of crystalized magnesium chloride ($Mg.Cl_26H_2O$) may be used.

6. *Dilute Ammonia for Washing.*—One volume ammonia of sp. gr. 0.96, mixed with 3 volumes of water, or *usually* 1 volume of concentrated ammonia with 6 volumes of water.—*Chem. News.*

* This filtration should not exceed fifteen to twenty minutes in duration, and in difficult cases is best effected by use of a plaited filter of very porous paper, or by help of a filter-pump of moderate power.

Removal of Arsenic from Zinc.

ACCORDING to l' Hôte, metallic zinc may be rapidly freed from arsenic by melting it and adding from 1 to 1½ per cent of anhydrous chloride of magnesium while stirring. Vapor of chloride of zinc will be given off, and all the arsenic will escape as trichloride. When poured into water, the granulated zinc will be found completely free from arsenic, and will have the additional advantage of being more readily soluble in dilute sulphuric acid than the ordinary metallic zinc.—*Revue Indust.*

A New Test for Iodine.

A NEW and very delicate test for iodine is mentioned in the *National Druggist* as having been recently employed by Dr. Frericks of the Mallinckrodt Chemical Works at St. Louis, and communicated by Prof. Chas. O. Curtman, M.D.

The reagent, which is able to reveal small quantities of iodine in presence of all other members of the chlorine group, is made by precipitating the an aqueous solution of nitrate of silver by chloride of sodium, separating the silver chloride by filtration, washing it thoroughly, and then dissolving it in an excess of water of ammonia.

This ammonio-chloride of silver will produce a yellow-precipitate of silver iodide in liquids containing even a trace of a soluble iodide.

Volumetric Iodine Solution.

IN a review of the volumetric processes described by the last German Pharmacopœia, Jassoy draws attention to a method which is not quite new, we believe, but comparatively little known or used, of ascertaining the exact strength or titre of the iodine solution. The latter is usually made by starting from a known weight of supposed pure and dry iodine. To obtain the latter. the iodine mixed with some iodide of potassium is usually directed to be resublimed several times, and finally to be dried over sulphuric acid. The weighing of the purified iodine, moreover, must be performed with great care, the iodine being inclosed between two watch glasses, in order to avoid loss by evaporation. All this is very circumstantial. A much more simple and exact method is the following:

Prepare a $\frac{1}{30}$ normal solution of purified bichromate of potassium, containing 4.92 Gm. per liter. This solution when once prepared and kept so that it cannot lose water by evaporation, retains its original strength permanently. The bichromate must first be completely freed from sulphuric acid by repeated crystallization, and finally fused in a porcelain capsule, with avoidance of too high a heat. On cooling, it falls to a fine crystalline powder and is in the most suitable condition for exact weighing.

If it be now desired to ascertain the exact titre of the volumetric solution of hyposulphite of sodium (see U. S. Ph., p. 395), 25 C.c. of the bichromate solution are introduced into a stoppered flask of the capacity of 300 to 400 C.c. (10 to 13 fl. oz.), 100 C.c. (ab. 3 oz.) of water are added, then 5 C.c. of hydrochloric acid, and finally 1.5 to 2 Gm. of *pure* iodide of potassium. The flask is closed and allowed to stand for a few minutes, when the whole of the iodine of the iodide of potassium added will have been liberated. Next, enough hyposulphite solution is added from a burette until all the iodine is fixed, and the liquid has acquired a faint bluish color from the presence of chloride of chromium, without the least tint of yellow. This point may be reached in daylight, even without the aid of an indicator, to a drop. Supposing 25.4 C.c. of the hyposulphite solution had been used for fixing the iodine liberated by the 25 C.c. of bichromate solution originally employed, then the "factor" for the hyposulphite solution [which only in very rare cases, or by accident, will correspond with the iodide solution cubic centimeter for cubic centimeter, or 1 to 1] will be $\frac{25}{25.4} = 0.984$.

Now if it is also desired to learn the exact titre of the iodine solution, so as to ascertain its "factor," it is only necessary to multiply the number of C.c. of "hypo" solution required for fixing the iodine in a given volume of the $\frac{1}{10}$ iodine solution (see U. S. Ph., p. 396), with the factor previously ascertained for it, and to divide the product by the number of C.c. of the iodine solution used. Supposing, for 20 C.c. of iodine solution of unknown strength, 20.3 C.c. of the above-mentioned "hypo" solution had been consumed, the "factor" of the iodine solution will be $\frac{20.3 \times 0.984}{20} = 0.998$.

It will thus be seen that every incorrect volumetric liquid may be rendered available and correct by ascertaining its factor—that is, the fraction which must be used, in place of the figure 1, to measure its equivalence with its corresponding test liquid.—After *Pharm. Rundschau* (*Leitmeritz*).

Sensitiveness of Permanganate of Potassium Towards Sun-light.

A. REISSMANN has observed that the dry crystals of permanganate of potassium, when exposed for some time to light, suffer a change in the surfaces thus exposed, the superficial layer being reduced to hydrated manganic peroxide. On dissolving the crystals in water, this external layer, which still possesses the form of the crystalline sides, remains behind as a shining sediment. The author concludes from this that solutions of permanganate suffer the same change along the sides of the vessels which are exposed to light, and that this change may be avoided by keeping the solution in the dark.

That the last-mentioned method of keeping permanganate solution conduces to its stability, has been observed before, although an absolute stability has probably never been attained. After *Zeitsch. f. Anal. Chem.*, 1885 84.

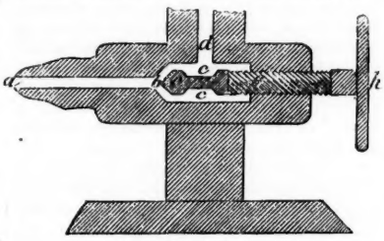
The Detection of Aloes.

MR. R. A. CRIPPS and T. S. DYMOND have proposed a new color-test for the detection of aloes in pharmaceutical preparations. Hitherto the best method was that proposed by Bornträger, which consisted in extracting the substance with alcohol, filtering, shaking the filtrate with benzol, removing the benzol layer, and agitating it with ammonia. On standing, the aqueous liquid should assume a pink color in presence of aloes. The coloration was tardy in production, and it has been shown by Lenz that any substance containing chrysophanic acid gives a similar result. Klunge's test consisted in adding a drop of copper sulphate solution to a very dilute, almost colorless solution of the suspected substance; an intense yellow changed by warming with sodium chloride to a deep red or violet indicated aloes. But all varieties of aloes do not give this deep red, nor is the distinctive yellow seen in solutions already containing yellow coloring-matter, such as saffron. The authors have, therefore, devised a new test, intended to be applied directly to a solid substance: Place 1 grain of the substance in a glass mortar standing on white paper. add 16 drops of strong sulphuric acid, and triturate till the whole is dissolved; add 4 drops of nitric acid, sp. gr. 1.42, and lastly 1 oz. of distilled water. If aloes be present, a color varying from deep orange to crimson will be produced, according to the kind of aloes employed. To confirm, add ammonia when the color is deepened, usually to a deep claret. By this means not only is aloes detected, but the kind of aloes is indicated. Barbados, true Socotrine, and Natal produce a crimson, while Hepatic and Cape give only a deep orange-red coloration. For comparison, H_2SO_4 and vapor of HNO_2 were also employed, which produce with certain aloes a play of colors passing through green, blue, and violet to crimson.

A large number of complex preparations were examined, when it was seen that, though the presence of aloes never failed to make itself manifest, rhubarb and substances containing chrysophanic acid behaved in the same way. But using this test, a nearly colorless solution of aloes does not become pink on the addition of ammonia, as is the case with solutions of chrysophanic acid, and in this way aloes may be distinguished.—*Chem. and Drugg.*

Detection of Carbolic Acid in Creasote.

WHEN a few drops of sweet spirit of nitre are mixed with a dilute solution of carbolic acid, and an equal volume of strong sulphuric acid added, a pink colored ring is formed, and on mixing, a red colored solution is obtained (Eykman). In a paper communicated to the Edinburgh Chemists' Assistants Association, Mr. P. MacEwan proposes to take advantage of this reaction for the detection of phenol in creasote. Creasote gives a brown ring and brown solution, but if it contain phenol the sulphuric acid acquires a pink tint (transient, if a small percentage only is present), and when the layers are mixed a reddish-brown froth is produced. If the mixed solution from pure creasote be allowed to stand until the flocculence rises to the surface, the clear solution is found to be of a pale-brown color; but if the creasote contain phenol the solution is dark-red or reddish-brown.—*Chem. and Drugg.*



Halberman's Gas-Burner.

AN IMPROVED BURNER.

WHEN it is desired to adjust the size of the flame issuing from any of the ordinary gas-burners so as to produce a certain constant temperature, it is found very difficult to do so, as a delicate adjustment of the ordinary gas stop-cock cannot well be managed by turning it with the hand. J. Halbermann overcomes this defect by employing a burner constructed as shown in the illustration, in which the adjustment may be effected by a valve-cock, the stem of which carries a screw-thread. The gas enters at *a*, where a rubber-tube connects the burner with the supply-pipe, and it issues at *d*. The upper part of the burner may be of any special construction desired. —*Chem. Centralbl.*

The Detection of Caramel.

DR. KARL AMTHOR has founded a method for the detection of caramel in white wines and spirits, upon the following reaction: If para-aldehyde be added to an alcoholic liquid colored with caramel, a brown precipitate is formed, and on adding sufficient para-aldehyde the liquid is decolorized.

The author proceeds as follows: To 10 C.c. of the liquid to be examined are added 30–50 C.c. para-aldehyde (according to the intensity of the color), alcohol being added in sufficient quantity to cause the liquids to mix. (For wine 15–20 C.c. are sufficient). If caramel be present, a brownish-yellow to deep brown precipitate is formed after twenty-four hours. The supernatant liquid is decanted, and the para-aldehyde washed out with absolute alcohol. The precipitate is then dissolved in hot water, filtered and concentrated to 1 C.c. The amount of caramel can now be roughly estimated from the intensity of the color. If only a small quantity of caramel be present in the wine, it must be concentrated over sulphuric acid, and proceded with as above. Evaporation by warming is to be avoided, as substances resembling caramel are very easily formed and lead to false results.

The caramel precipitate with para-aldehyde can be confirmed by adding a solution of phenylhydrazin hydrochloride (2 parts of phenylhydrazin hydrochloride, 3 parts of sodium acetate, and 20 parts water) to the filtered solution of the caramel precipitate in hot water. After 24 hours an amorphous brown precipitate separates out. If only a small quantity be present, the solution becomes just turbid, and the precipitate forms after 24 hours.

The solution of the white precipitate formed by adding para-aldehyde to a pure white wine, gives no precipitate with phenylhydrazin.—*Zeitsch. anal. Chem.* and *Analyst.*

Menthol and Menthol Cones.*

MENTHOL has been known for a long period of time, but it is only during the last two years that it has become, owing to its great consumption in the manufacture of menthol cones or pencils, an article of commercial importance.

Menthol has been used by the Japanese for nearly two hundred years, and is known by them as "Hakka-no-sei," or "Hakka-no-Hair." Previous to the late change in the social system of Japan, the native gentlemen there were accustomed to carry attached to their girdle a medicine-box, which contained, among other things, a compound called "Hotan," of which menthol was one of the principal ingredients.

As early as 1829, the composition of menthol had been investigated by the chemists Walter, Blanchett, Sell, and Dumas, by whom the substance was known as peppermint or solidified oil of peppermint. Oppenheim mentions, in 1862, a Japanese oil of peppermint derived from *Mentha Arvensis* of which the melting-point was 36° C., the boiling-point 210 C., and the percentage composition.

C.....	.....76.93
H.....	.....13.40
O.....	..... 9.67

In 1864, Mr. John Mackay, of Edinburgh, Scotland, notes the arrival in London of a quantity of Chinese oil of peppermint, some of the canisters of which had the peculiarity of becoming solid in cold weather. Mr. John Moss, in 1874, speaks of both the solid and liquid oils of peppermint as having arrived from Japan. The fusing-point of the solid oil he found to be 39° C., and the boiling-point 215° C. This same menthol was handed by Mr. Moss to Messrs. Beckett and Wright for examination, and after purification these chemists found its melting and boiling points to be 42.2° C. and 212° C respectively, while by combustion they got 76.35 per cent of carbon, and 12.91 per cent of hydrogen. Menthol, which is a stearoptene oil of peppermint, has also been investigated by Atkinson and Yoshida, and its formula is now generally recognized as being $C_{10}H_{20}O$. Menthol is a proximate principle in oil of peppermint, but it appears to exist in larger proportion in the oil obtained from *Mentha arvensis var. purpura-*

* Paper read by G. C. Waldie, of New York, before Hawick Pharm. and Chem. Assoc., England, Feb. 10th, 1885.

scens, than in any other oil. A variety of menthol is obtained in Michigan from the oil of *Mentha piperita*, which it has been proposed to call "pipmenthol," in order to distinguish it from the Japanese article. Pipmenthol has a distinct odor of oil of peppermint, whereas menthol has that odor but slightly.

Mentha arvensis, var. purpurascens is a perennial herbaceous plant, with a creeping root, and quadrangular, purplish colored, and hairy stem.

The leaves are opposite, serrate, smoother on the upper than on the lower surface, and of a dark greenish-purple color, with a lighter shade of purple underneath. Clusters of small purplish-white flowers are produced on the axils of the leaves, and the plant grows to a height of from one to three feet.

There is apt to grow amongst this species of mentha a plant yielding inferior oil of peppermint, for which the name of *Mentha arvensis, var. vulgatissima* has been proposed.

The plant grows both on wet and dry soils, but is best suited with one that is light and sandy. It is propagated by the root, pieces of which, six inches long, are thickly planted in the ground in November, and left until spring.

The ground is previously prepared by being well dug with spades and divided into ridges, in which the roots are placed. In the spring, the roots have grown about three inches above the ground, and the roots are then transplanted to a previously-prepared site, and liberally supplied with good manure. The plant blossoms in June, the length of the herb being from eighteen to twenty-four inches. It is then cut, a dry morning after rain being best suited for this operation. This gives the first crop, which is made up into bundles and dried in the shade. The ground is again manured, and a second crop is obtained in August.

The average yield of the dried herb is five tons per acre, but it varies greatly according to the weather, the nature of the soil, and the quantity of manure made use of. The plant grown in a dry season yields a much better oil, and this contains a larger percentage of menthol, though the yield per acre of the herb is less.

The cultivation of this plant rapidly exhausts the soil, and farmers are obliged to rotate their crops carefully.

The oil is extracted from the herb by the farmers by means of steam-distillation, the apparatus employed being of a somewhat primitive description. This operation gives crude oil of peppermint, and this is what the farmers sell to the agents who collect it from them.

Menthol is obtained in the laboratory by cooling the oil to 15° C., when the stearoptene readily crystallizes in large trimetric crystals. These, when purified by repeated crystallization, are in appearance not unlike magnesium sulphate. The crude oil contains from 50 to 60 per cent of menthol, and in exceptionally dry seasons as much as 75 per cent has been obtained. Commercial menthols melt at from 37.7° to 42.2° C., the melting-point depending on the freedom of the menthol from essenthal oil; a small percentage of essential oil lowers the melting-point considerably,

Menthol is very soluble in alcohol, ethers, chloroform, bisulphide of carbon, and most oils, but is more soluble in oil of peppermint than in any other. It has a specific gravity of 0.890, and small particles gyrate on the surface of water like camphor. Several compounds of menthol have been obtained, the acetate, which is got by heating menthol with glacial acetic acid, being a light oil-like body without color. By substituting butyric for acetic acid butyrate of menthol [?] is obtained. The compounds of the alkalies and menthol are very unstable, and need not be considered.

The following are regarded as reliable tests for the purity of menthol:—

1. It should be completely and readily soluble in twice its weight of chloroform. On the addition of a small quantity of iodine to this solution a rich indigo-blue color (not dark green) ought to be imparted, and this color should be completely discharged on shaking the mixture with solution of caustic potash or soda.

2. The melting-point ought to be 42.2° C. (108° F.), and the boiling-point not lower than 212° C. (413.6° F.), and there should be no residue on evaporation.

3. Menthol shaken with an oxidizing mixture, such as sulphuric acid and bichromate of potash, ought to be entirely converted after prolonged heating into a dark green flocculous substance (menthene).

4. Strong sulphuric acid ought not in the cold to blacken menthol to any considerable extent.

5. When menthol is heated with a small quantity of anhydrous zinc chloride, the mixture ought to give off the odor of menthene.

6. Strong caustic potash solution has no action on pure menthol.

It is only within the last three or four years that the value of menthol has been recognized by Western nations. The *Lancet* (London) drew attention to it in 1879, and since that period many medical men, both in Great Britain and America, have published their experiences of it as a remedy for diseases, such as headache, neuralgia, toothache, epidemic influenza, etc. So popular has this specific become that at the present day by far the largest proportion of the menthol produced is employed in the manufacture of menthol cones, which are made use of as a household remedy for nervous diseases such as those mentioned.

Menthol intended for the manufacture of cones must be without a trace of oil of peppermint, as the smallest percentage of the latter lowers the melting-point so much as to render it quite unsuitable for this purpose. As yet there are very few makes in the market suitable for cones, but it is highly probable that in the near future the contamination of menthol with oil will be entirely obviated in the process of production.

Menthol cones are made in the same way as suppositories, the menthol being first fused and then poured into metal moulds. The placing of the cones in the wooden cases is accomplished by simply heating the proper end of the cone in a small flame, as sealing-wax is heated, and quickly placing it in the recess. Wooden cases are preferable to those made of metal, the latter, owing to the property metal possesses of being a good conductor, being apt to get heated in warm climates. The result is that the menthol which touches the metal melts, and the cone becomes quite loose.

The different menthol cones in the market may be classed under five heads.

1. Cones prepared from pure menthol, that is, menthol having a melting-point of 42.2° C. The characteristics of these cones are that they are hard, and when scraped with the finger-nail feel gritty and stonelike. When rubbed on the skin they are susceptible of a high polish. The cone is completely soluble in alcohol, and a small piece heated in a test-tube melts very readily.

2. Cones that have been prepared with menthol that has not been completely freed from oil of peppermint. These are recognized by their comparatively strong odor of peppermint, and by their melting-point being under 42.2° C.

3. Cones made of wax, stearin, cetaceum, or paraffin, with varying proportions of menthol. The menthol used in this class has not, as a rule, been completely freed from oil of peppermint.

These, when scraped with the finger-nail, have not the stone-like grit characteristic of the first class, but feel soft and yielding, and small pieces readily peel off. When a small portion is heated in a test-tube, a little is melted from the outside, and the remainder floats in the liquid thus formed, at the same time slowly dissolving. A fragment placed in cold alcohol does not dissolve; if the cone has a larger percentage of menthol than wax, etc., the edge of the fragment becomes fringed, owing to the menthol dissolving out and leaving the wax which was disseminated throughout the cone as a framework; but if the wax be in excess the alcohol has no visible effect. If the alcohol be heated the fragment liquefies; the menthol dissolves in the alcohol, and the wax solidifies on cooling. The proportions of both may in this way be determined.

4. Cones consisting of menthol, with the addition of some powder as an adulterant.

These are recognized by simply rubbing them on the skin, when they impart a feeling as if the latter were being rubbed with pumice-stone soap. This is owing to the menthol dissolving out and leaving the grains of insoluble powder sticking on the cone like the pumice-stone in the soap.

5. Cones which may belong to any of the above classes, but which contain in addition a small percentage of eucalyptol, thymol, benzoic acid, or other irritant.

The distinguishing feature of this class is the intense prickling sensation experienced when the cone is applied to the skin, which presently assumes a bright scarlet appearance, the irritating effect produced by these substances being quite distinct from the cooling sensation imparted by menthol.

The action of menthol depends on its rapid and complete evaporation from the skin; but when a cone composed of greasy matter and menthol is used, the grease retards, if it does not actually prevent, this evaporation, and thus causes the menthol to act as an irritant. Pure menthol cones slowly evaporate on exposure to the air; in cones made partly of fatty matters this tendency is greatly checked. When any powder has been used to adulterate the menthol, it is seen as a coating on the outside of the cone after the latter has been exposed for a few days, the non-volatile powder having been left behind after the menthol had evaporated. It is clear, therefore, that only the purest menthol is suitable for the preparation of cones, and that no admixture of any kind ought to be employed in their manufacture.

Styrone as a Disinfectant.—Dr. S. A. Popoff has found that styrone is a more powerful antiseptic than either phenol or thymol. A specimen of urine to which styrone (1 to 500) has been added showed no trace of decomposition at the end of three and a half months. A few experiments with styracin showed that it also possesses very strong antiseptic properties. Styrone is cinnamic alcohol, and can be obtained by treating styracin with concentrated solution of potash. It is not present in liquid storax, from which styracin may be extracted by ether, benzol, or alcohol, after the separation from the resin of the cinnamic acid.

Asthma Cigarettes. — Impregnate well-nitred tobacco with an alcoholic fluid extract of grindelia ; let dry, and use in cigarettes. Owing to the nitre, they will continue to glow and to develop smoke.—*Boston Journal of Chemistry.*

Unpleasant Taste from Wooden Vessels.—It is often found desirable to remove the unpleasant taste which is frequently observable from new wooden vessels. This is often a thing difficult of accomplishment. An exchange suggests that the simplest plan, and one that will succeed in most cases, is to scald them thoroughly several times with boiling water; then dissolve some pearlash or soda in luke-warm water, adding a little lime to it, and wash the inside of the vessels well with the solution. Afterwards scald them again thoroughly several times with boiling water as before.

To Decolorize Gum-Arabic.—Strain a solution of gum-arabic through calico, mix with freshly precipitated (moist) hydrate of alumina, and strain through a linen cloth.

Ribbon Ink, such as is used on the type-writers:

Anilin Black.....	½ oz.
Alcohol.....	15 "
Concentrated Glycerin.	15 "

Dissolve the anilin black in the alcohol, and add the glycerin.—*Scient. American.*

Antiseptic Mouth Wash.—Magitot's formula consists of:

Borate of Sodium....	15 grains.
Thymol.....	8 "
Distilled Water.....	1 pint.

This not only removes fœtor of breath, but lessens sensitiveness of the teeth.

Pressure in Mineral Water and other Bottles.—The average pressure in soda and some other mineral water bottles is about 56 lbs. per square inch, when filled from cylinders pressed to 145 lbs. per square inch. When filled from cylinders in which the aërated water is at a pressure of 100 lbs., the pressure on the bottle is, on an average, nearly 49 lbs. per square inch. The pressure in the champagne bottles during fermentation was seen at the cellars of Messrs. Deinhardt & Co., Coblentz, by some of the members of the Iron and Steel Institute, to reach, and (in some cases) exceed, a pressure of seven atmospheres, or an average of about 105 lbs. per square inch.

Syrup of Violets.—The formula of the Pharm. Lond. was as follows: Fresh petals of *Viola odorata* ℥ ix.; boiling distilled water, Oj. Macerate for twelve hours, express and strain. Let the drugs subside and dissolve in the clear liquor, by the aid of gentle heat, twice its weight of sugar. When the syrup has cooled, add fl ℥ ss. of retified spirit to each fl ℥ i. of syrup.

Jaravanda Lancifolia.—Mennel reports in the *Br. Med. Jour.* fourteen cases of urethritis and secondary syphilis treated with this remedy with good results. Fifteen minims of the tincture internally, or ten minims with water as an injection, is the dose.

Phosphide of Zinc, according to Decoux, has no properties as a remedy for irregular menstruation not possessed by phosphorus, excepting its greater safety and manageability. The dose is a sixth of a grain, in pill form, morning and night.

Quinoline, according to Seiffert, is a valuable local remedy in diphtheria, when employed in a five-per-cent solution. A fall in temperature and improvement in local and general conditions results.

Harmful Effects of Boric Acid as a Food Preserver.—J. Foster concludes from a series of experiments, that the use of boric acid as a food preservative either interferes with the usefulness of some of the elements of the food, or causes intestinal catarrh. It is, therefore, by no means harmless when thus used.—*Zeitsch. Anal. Chem.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,450.—**Peppermint** (C. A. D).

As a supplement to our reply to query 1,414 in our February number, we publish the following:

DEAR SIR:—We have written so much upon menthol and the plant yielding it, that we were surprised when our attention was called by a member of the Pharmaceutical Society to your notice on page 38, No. 1,414, referring the people to Thistleton Dyer, of Kew, whereas you have had it recorded in your paper that we are the growers and introducers of the Japanese plant. We have furnished Mr. A. M. Todd with his stock of plants, and have sent specimens to the different botanical gardens in Europe, and also America. There are other houses we have furnished in America with the true variety.

We are yours faithfully,

THOMAS CHRISTY.

155 Fenchurch st.,
LONDON, E. C., Feb. 24th, 1885.

We confess to an oversight in not giving Mr. Christy's address in our February answer, and regret it the more because Mr. Christy has so long been known as one of the most extensive and reliable dealers in foreign medicinal plants.

No. 1,451.—**Mirin-shu** (Rice Wine).

Made from what is known as Mochigome rice. The rice is first steamed and then put in a barrel with water and left twenty-one days, and then this water is decanted off and afterward mixed with what is pressed from the rice.

The after-process must be similar to the making of grape wine, as there appears to be considerable spirit and other indications of fermentation. This mochi-gome rice is a quality of glutinous rice much used for making bread—a commoner quality than such as is used in this country—some is imported, but no regular demand for it.

No. 1,452.—**Gelatin Dry-Plates.**

A correspondent on the Pacific Coast wishes for some practical directions for making gelatin dry-plates for photographing. We have at hand a number of articles on this topic in photographic journals, but for any one besides a person engaged in the business they would be of but little practical value. In a recent lecture delivered before the Chemists' Assistants' Associan, by Mr. C. F. Wyatt,* on practical photography, he remarked that "the manufacture of these gelatin dry-plates is very troublesome, and as they can be bought ready for use at a reasonable price, I should strongly recommend any one not to make them." . . .

"I have made some myself, but shall probably not repeat it, as the plates cost rather more than they could have been bought for, besides requiring, on an average, about an hour's time for each plate that is fit for use."

A number of excellent makers in this country can supply plates packed so that they may be safely shipped to any part of the world, and from some personal experience we strongly indorse what Mr. Wyatt has said about the expediency of attempting to make them.

* Chemist and Druggist.

No. 1,453.—**"Black Heads"** (M.C.S., Madison, Ind.).

"Black Heads," "Flesh Worms," and "Pimples" are all phases of what is called by doctors, *Acne.* It is most common to both sexes about the age of puberty and consists, generally, in a very abundant secretion of fatty matter by the sebaceous glands of the skin. When the skin adjoining the gland is squeezed the fatty matter is shaped by the narrow orifice into a grub-like mass, and the dirt that has adhered to the secretion gives to the portion first extruded the semblance of a head. When the flesh around the gland becomes inflamed it gives rise to a pimple. The *simple* remedy consists in removing the excessive amount of fat, and this is best done by washing the face at bed-time for five minutes or more, with a half pint of *hot* water to which a teaspoonful of water of ammonia has been added, using a small, soft sponge for its application. Do this every night for a considerable period—say a fortnight.

No. 1,454.—**"Thumps"** (A. S., Milford, Mass. .

The disease in the horse known as "thumps" is palpitation of the heart, and, like the same symptom occurring in the human subject, may be caused by derangement of the digestive or respiratory organs; by an impoverished blood, by nervousness or by overwork, in which cases it may be relieved, but when it results from actual disease of the heart itself a "sure cure," such as you desire, is hardly possible.

Tellor says: "Careful avoidance of sudden excitement and over-exertion are to be looked to in the first place. Full doses of digitalis, say one-half drachm of the powdered leaves may be given twice a day in the food for several weeks. Indigestion and constipation must be prevented by appropriate treatment. Frequently the digitalis may be combined with salines with advantage, as:

Powdered Digitalis leaves.....	30 grains.
Chlorate of Potassium,	½ oz.
Or Nitrate of Potassium,	1 oz.

To be given once a day.

When the palpitation is associated with increased size of the heart, and a full and strong pulse, it is better to use aconite: Tincture of aconite-root, 20 drops, to be used in the above prescription instead of the potash, or dropped into the drinking water, twice a day."

No. 1,455.—**Red Color in Carbolic Acid** (O. R.).

This correspondent asks how the red color may be removed from Calvert's carbolic acid. It would seem that some one suggested to him to add an equal volume of glycerin; but this did not turn out satisfactory, at which we are not at all surprised. We have frequently printed papers and abstracts of papers treating on the reddening of carbolic acid, its causes and prevention. Its *cure,* however, is a subject which has not been specially treated, but is sufficiently clear to any one who has read the articles carefully, or who has a knowledge of the chemical and physical properties of carbolic acid. This "cure," or the removal of the red color, can, of course, only be accomplished by redistilling the acid, which may be done in a retort, special care being taken that the heat is applied gradually and uniformly, and that none of the vapors escape or come in contact with the flame. The operation, however, will be scarcely profitable on a small scale.

As to the causes of the reddening, the presence of ammoniacal vapor has at one time been supposed to be the agent producing the tint; others supposed they had found it in nitrous acid. Lately it has been ascribed to the presence of traces of iron (see also last number, p. 56).

No. 1,456.—**Tinctura Amara** (R. McN., Philadelphia, Pa.).

Tincture Amara, or "Bitter Tincture," of the *Pharm. Germ.* as given in the latest edition, is

Gentian	3 parts.
Centaury	3 "
Orange-peel	2 "
Orange berries	1 "
Zedoary	1 "
Diluted alcohol	50 "

The drugs, finely cut or in coarse powder, are macerated for one week with the diluted alcohol, in a closed bottle, in a shady place, with frequent agitation, at a temperature of about 15° C. Then strain and, after standing for a time to allow any sediment to settle, filter with precaution as regards evaporation of the alcohol.

No. 1,457.—**Solidified Glycerin.**

There are several combinations which have received this name, at least commercially. One of these is glycerite of starch, which is officinal in the U. S. Ph., and is prepared by rubbing together, in a mortar, one part by weight of starch, and nine parts of glycerin, then transferring the mixture to a porcelain capsule and gradually heating to 140° C. (284° F.), taking care that the heat do not exceed 144° C. (291° F.), until the starch granules are completely dissolved, and a translucent jelly is formed. This may then be suitably scented, and admirably answers all purposes for which glycerin is valuable as an external application.

Another is to dissolve one part of so-called transparent soap in a mixture of four parts of water and four parts of glycerin by the aid of heat, and then to add twenty parts more of glycerin. If desired softer, more water may be added. When nearly cold, perfume to taste, and pour into glass jars.

If you want the glycerite as firm as simple cerate, you may slightly increase the quantity of starch, but you will have to take particular care that the gelatinizing portion of the contents of the capsule is constantly being scraped off, so as to prevent overheating.

No. 1,458.—**Hand Decoction Apparatus** (A. F., Knoxville, Tenn.).

The hand-decoction vessels, described on page 46, are of German manufacture. We will suggest that you write to E. A. Lentz, of Berlin, or to Dr. Herman Rohrbeck, maker of Pharmaceutical Apparatus, 100 Friedrich st., Berlin, N. W., for his catalogue (No. Xa) of pharmaceutical apparatus and utensils.

No. 1,459.—**Extraction of Alkaloids** (M. H. S.).

The article on alkaloids which you have seen in some back volume of this journal (NEW REMEDIES) may be either that published on page 239 of the vol. for 1876, or that on page 22 of the vol. for 1880. The former is an abstract by a paper of Rennard, in which the author recommends improvements in the method of extracting alkaloids in the medico-legal examination of animal organs. The second article contains an improved process for extracting alkaloids from vegetable products. In connection with the above, you might read with advantage Mr. H. B. Parsons' article on alkaloids, in NEW REM., 1879, p. 153.

No. 1,460.—**Compound Elixir of Taraxacum** (E. J.).

Since the publication of the formula adopted by the Joint Committee which prepared the New York and Brooklyn Formulary, this has probably been more generally followed than any other. We will reprint it here:

Taraxacum	480 grains.
Wild Cherry	480 "
Sweet Orange Peel	480 "
Liquorice Root, Russian, peeled	960 "
Cinnamon	120 "
Cardamom	120 "
Canada Snake Root	120 "
Caraway	120 "
Cloves	120 "
Pure Extract of Liquorice	60 "
Alcohol, Water, each	q. s.
Syrup	32 fl. oz.

Grind the solid substances to a moderately coarse powder and percolate, in the usual manner, with a mixture of *one* (1) volume of alcohol and *two* (2) volumes of water, until *sixteen* (16) fluid ounces of percolate are obtained. In this dissolve the extract, and lastly, add the syrup.

(If a precipitate should make its appearance in the elixir on standing, it should be incorporated with the liquid by shaking before use.)

No. 1,461.—**Cascara Cordial** (C. E. H.).

We presume you mean an elixir of Cascara, in which the disagreeable taste of the drug is covered as much as possible.

The "New York and Brooklyn Formulary" has adopted the following, which will answer your purpose:

Elixir Rhamni Purshianæ (Elixir of Cascara Sagrada).

Fluid Extract of Rhamnus Purshiana	4 fl. oz.
Compound Elixir of Taraxacum	4 fl. oz.
Simple Elixir	8 " "

The formula for the Comp. Elixir of Taraxacum you will find elsewhere in this number.

No. 1,462.—**Separation of Albuminoids from Peptones** (E. B. S.).

The source to which you have been referred, for information about Stutzer's method of separating albuminoids from peptones, namely *Berichte d. Deutsch. Chem. Gesellsch.*, XIII., 251, does not give the process itself, but merely contains a general statement regarding the principle upon which the process is based, and the announcement that the paper on the subject would appear in full in another journal (*Journal f. Landwirthschaft*, 29, 473).

We will first give Stutzer's process, for separating proteïn bodies from other nitrogenized substances (after *Zeitsch. f. Anal. Chem.*, 1882, 600).

The substance is properly comminuted, and passed through a 1 millimeter sieve. 1 Gm. of it (or only 0.5 Gm. if the substance is rich in nitrogen), is then put in a beaker, a mixture of 1 C.c. of acetic acid and 100 C.c. of alcohol added, and the whole raised to boiling. After cooling, the liquid is passed through a flat filter, so that nothing, or but slight traces, of the insoluble matters are transferred to the filter. The latter is then washed with warm alcohol, for the purpose of removing acetic acid and any dissolved fats, and afterwards set aside. To the residue remaining in the beaker 100 C.c. of water are added, the mixture is either heated to boiling, or to a temperature of 90° C., continued for 10 minutes, on a water-bath, and when partly cooled mixed with 0.3 to 0.4 Gm. of cupric hydrate made into a paste. After a few minutes, the insoluble matters are transferred to the filter previously used, and the latter well washed, whereby all other nitrogenized bodies pass into solution. The residue is then dried at 100–110° C., and the nitrogen determined in it by combustion with soda-lime (described in detail in *Journal f. Landw.* 1880, 106). The difference between the figure thus found, and the total nitrogen contained in the original substance corresponds to the quantity of nitrogenized bodies present that are *not* proteins.

According to another reference, which we cannot trace to its true source for the moment, Stutzer separates the albumins from the peptones as follows: The solution is slightly acidulated with acetic acid and then mixed with hydrated cupric oxide, in the proportion given above. This causes a precipitate of the albumins. The nitrogen in this precipitate is determined by combustion with soda-lime, and the amount found, multiplied by 6.25, corresponds to albumin. The filtrate left from the last operation is then acidulated with hydrochloric acid and mixed with solution of phosphomolybdic acid, which precipitates the peptones. These are then determined in the same manner.

No. 1,463.—**Manifold Paper** (Rochester, N. Y.).

A formula which has been well recommended to us says: "Take lard oil or sweet oil, mixed to the consistence of cream with either of the following pigments, according to the color desired: Prussian blue, lampblack, Venetian red, or chrome green, either of which should be rubbed with a knife on a plate or stone until smooth. Use rather thin but firm paper; put on with a sponge, and wipe off as dry as convenient, then lay between sheets of uncolored paper, and press (under books or some other weight) until the surplus oil is absorbed when the sheets will be ready for use.

No. 1,464.—**Removal of Potash from Sugar Beet Juice** (G. H. H.).

Our correspondent writes: "Can any of your readers give me any information as to what process will remove the potash from sugar beet juice?"

We should be very glad ourselves to know such a process, but must confess that we know of none which is practicable on a large scale. On a small scale it is easy enough to remove potassium with platinic chloride, or with hydrofluosilicic acid. The last named agent has even been tried on the large scale, but was not found to work well, owing to the difficulty of removing the products of the reaction and the excess of the reagent. We can, however, not conceive what object the removal of potassium could have, since the juice contains other bases, which, together, render the final residue—beet sugar molasses—so saline and disagreeable that it is unfit for culinary purposes. Beet juice contains a small quantity of mineral constituents, which increase in proportion as the juice is concentrated, and which are finally left in the molasses, after the sugar has crystallized out. Some of these (as calcium salts) can be and are removed by appropriate processes; but potassium and sodium salts are not separated, as there is no practical process available for their removal. If any of our readers can throw light on this subject, we shall be much obliged.

No. 1,465.—**Churchill's Hypophosphites** (H. E. H.).

What is sometimes called Churchill's Syrup of Hypophosphites of Lime and Soda did not, we believe, originate with Dr. Churchill, but should rather have been called Syrup of Churchill's hypophosphites, as he was the first to introduce the hypophosphites into medical practice. At this day, the word Churchill should be dropped, since we have an excellent officinal syrup containing calcium, sodium and potassium hypophosphites. The N. Y. and B. Formulary also contains the following formula for

Syrupus Calcii et Sodii Hypophosphitum.

Hypophosphite of Calcium	256 grs.
Hypophosphite of Sodium	256 "
Sugar	12 av. oz.
Water, enough to make	16 fl. oz.

Dissolve the hypophosphites in eight fluid ounces of cold water, add the sugar, dissolve it by agitation, filter, and add enough water through the filter to make sixteen fluid ounces.

There are, however, three *simple* syrups ascribed to Churchill, namely:

Syrup of Hypophosphite of Calcium.

	Parts.
Hypophosphite Calcium	2
Sugar	131
Water	70

Syrup of Hypophosphite of Sodium.

	Parts.
Hypophosphite Sodium	5
Orange Flower Water	50
Syrup	350

Syrup of Hypophosphite of Ammonium.

	Parts.
Hypophosphite Ammonium	1
Syrup	100
Water	100

No. 1,467.—**Urea and Hypobromite** (N. N.).

This correspondent asks what reaction takes place when hypobromite of sodium acts upon urea so that the nitrogen of the latter is eliminated.

Urea is a true derivative of carbonic acid, or rather, carbon dioxide, one of the dyad oxygen atoms being replaced by two monad amide (NH_2) molecules. For this reason urea is also called "carbamide."

CO_2 or COO — (carb. acid) carbon dioxide

$CO(NH_2)_2$ or $CO\langle^{NH_2}_{NH_2}$ — urea or carbamide

Now when a hypobromite or a hypochlorite acts on urea, 1 molecule of the latter reacts with 3 molecules of either of the former, thus:

$$CO(NH_2)_2 + 3\,NaBrO = CO_2 + N_2 + 2H_2O + 3NaCl$$

urea + sodium hypobromite = carbon dioxide + nitrogen + water + sodium chloride

In fact, the whole of the nitrogen of the urea is eliminated as gas, mixed with carbonic acid gas, which latter is removed from the mixture by absorption in a caustic alkali.

A similar reaction takes place when urea comes in contact with nitrous acid. In this case, however, not only the nitrogen of the urea, but also the whole of that of the nitrous acid is liberated.

$$CO(NH_2)_2 + 2\,HNO_2 = CO_2 + 2\,N_2 + 3\,H_2O$$

urea + nitrous acid = carbon dioxide + nitrogen + water

As the water in nitrous acid is not involved in the reaction, we may consider the anhydrous acid N_2O_3 to be alone involved in the reaction. To aid the memory, the latter may then be sketched thus:

$$C\langle^{O}_{O}\langle^{:N:H_2}_{:N:H_2}$$

$$O\ :N_2:O_2$$

This means that all the nitrogen (N_4) goes together and passes off, leaving on the one hand carbonic acid gas (CO_2), and on the other hand, 2 mol. of water.

No. 1,468.—**Murdock's Liquid Food** (B.).

This is described to be "an extract of beef, mutton and fruits, containing [blood-] corpuscles and 12½ per cent soluble albumen." According to the *London Lancet* it gives the blood spectrum very strongly and contains so much albumen as to become almost solid with dilute nitric acid.

We are not aware that an analysis has ever been made of the article. This could, however, scarcely be expected to throw much light on its method of preparation. It will be easy for you to test the article practically without having to resort to a chemist, who will certainly charge you *at least* five and possibly ten times the sum you mention for an analysis that might be worth having.

No. 1,469.—**Saffranine** (W. H. B.).

This coloring agent may be obtained in New York from importers of anilin colors, for instance, from Lutz and Movius, 15 Warren street, who quote three grades on their list.

We may add that Saffranine is a monad base forming crystallizable salts with acids, which become decomposed when warmed in presence of much water. Saffranine has a greater resistance towards reagents than true anilin colors. Saffranine is derived from toluol, by producing from the latter into amido-derivatives and oxidizing the latter.

Free saffranine is easily soluble in water and alcohol, but insoluble in ether. The hydrochlorate is a little less soluble. The latter imparts, both to an aqueous and to an alcoholic solution, an intense reddish-yellow color, with a peculiar fluorescence. It constitutes the greater portion of the commercial "saffranine" which is put on the market either as a powder or as a paste.

By the way, red, orange and yellow coloring matters suitable for soapmakers' and perfumers' use are also in the market and may be obtained from wholesale dealers in essential oils.

No. 1,470.—**Liquid Shoe-Polish** (G. F. H.).

We will give you a few formulæ from good authorities, but wish it to be understood that we have no personal experience with them.

	Parts.
1. Boiled Linseed Oil	200
Burnt Umber, in fine powder	40
Asphalt, in fine powder	80
Oil of Turpentin	200

Heat the boiled oil with the umber and asphalt, in an iron kettle, over an open fire, to near the boiling point of the oil. Have a cover ready for the pot in case the oil should take fire. When the mixture appears quite homogeneous and apparent solution has taken place, let cool and add before the mixture is cold, the oil of turpentin.

This lacquer should be rather thinfluid when applied to leather, and may be warmed a little for this purpose. A few hours after being applied it produces a beautiful shining coat of great durability.

	Parts.
2. Caoutchouc, sliced	100
Petroleum	100
Bisulphide of Carbon	100
Shellac	400
Lampblack	200
Oil of Lavender	10
Alcohol	2,000

Upon the caoutchouc contained in the bottle, pour the bisulphide of carbon, cork the bottle well and let it stand for a few days, or until the caoutchouc has become thoroughly gelatinized or partly dissolved.

Then add the petroleum, oil of lavender and alcohol, next the shellac in fine powder, and heat the bottle to a temperature of about 50° C. (122° F.), taking care that as little as possible is lost by evaporation. (This may be avoided, in a well appointed laboratory, by an upright condenser.) When the substances are all dissolved, and the liquid is tolerably clear, add the lamp-black, mix it thoroughly by shaking, or better, incorporate it by trituration with the liquid, and fill the mixture at once into small bottles.

This lacquer dries rapidly and produces a deep black glossy coat of considerable elasticity. The latter may be increased by adding a little crude turpentin to the mixture.

	Parts.
3. Caoutchouc	10
Petroleum	20
Oil of Turpentin	10
Lampblack	50
Boiled Linseed Oil	500

Digest the caoutchouc with the oil of turpentin and petroleum until it is dissolved, then add the linseed oil, and lastly incorporate the lampblack.

No. 1,471.—**Elixirs** (J. G. H.).

This correspondent says that he has had trouble with his elixirs, many of them forming precipitates, although he worked very carefully.

In reply we would say that it is impossible to suggest a remedy as long as the precise formula and process followed in each case is not stated. The precipitate is most likely caused in one of two ways:

1. Either the liquid is too alcoholic to retain in solution those constituents which are little soluble in alcohol.

2. Or the liquid is too aqueous, there being too little alcohol to keep in solution resins, oils, and other principles chiefly soluble in alcohol.

In many cases it is impossible to so adjust the proportion of alcohol and water that no precipitate belonging to either class will be formed. Often there are both kinds of precipitates, sometimes, in highly alcoholic or highly aqueous liquids, there is only one. If a precipitate appears, the question is only whether the precipitate is an essential constituent of the elixir. If so, the liquids of the latter must be readjusted so as to keep the useful constituent in solution. On the other hand, if the precipitate is valueless, it is merely filtered out and thown away. However, if the precipitate was caused by the presence of too much alcohol, it is certainly more economical to reduce, if possible, the proportion of alcohol which will often result in the liquid remaining clear.

We would suggest that you try the formulæ for elixirs given in the New York and Brooklyn Formulary, copies of which may be obtained from Mr. O. J. Griffin, Clerk of College of Pharmacy, 209-211 East Twenty-third street, New York.

No. 1,472.—**Mathematical Chemistry** (J. G. H.).

This correspondent wants to know where he can get a "mathematical chemistry;" that is a book to aid him in working out chemical formulæ, such as these: How much anhydrous ferric oxide is required, theoretically, to yield 100 parts of metallic iron? or, How much sulphate of quinine will be required to furnish 5 av. oz. of pure quinine, etc., etc.

Our correspondent probably means a work containing a collection of problems to be worked out for exercise. There are a number of such books in existence, of which we will quote two for the present, one in English: Woodward, C. J., "Arithmetical Chemistry; or arithmetical exercises for chemical students," two parts, London, Simpkin (to be obtained through J. H. Vail & Co., 21 Astor place, N. Y.), and one in German: Stammer, Dr. Karl, "Sammlung von chemischen Rechenaufgaben," 2te Aufl., Braunschweig, 1878 (to be obtained through some German importing book dealer).

None of these works, however, gives

a complete explanation of every problem, and, indeed, this cannot be expected, and besides, would detract from the utility of the work itself. The knowledge requisite for solving the problems must be acquired from a systematic study of chemistry, chemical processes and reactions. When the latter are thoroughly understood, there will be no difficulty in calculating any prolem involving them. Our correspondent lives in a city where there is a good college of pharmacy. We would advise him to attend the lectures there, which will soon put him in a position to understand the subject.

The two problems above mentioned have the following solution:

1. As 111.8 parts of iron (contained in the molecule Fe_2O_3, 111.8+48=159.8) is to 100 parts of iron, so are 159.8 parts (or the molecular weight) of ferric oxide to the required (x) parts of ferric oxide,

$$111.8 : 100 = 159.8 : x$$
$$x = 142.93$$

Hence, to produce 100 parts of metallic iron, it requires 142.93 parts of ferric oxide.

2. As 648 parts (the double molecular weight) of quinine contained in one molecule of sulphate of quinine, is to 872 parts (or the molecular weight) of sulphate of quinine, so are 5 av. oz. of quinine to the weight of sulphate of quinine required. Substituting "grains" for parts and oz., we have:

$$648 : 872 = 2187.5 : x$$
$$x = 2942.4 \text{ grains of sulphate.}$$

The other problems given by our correspondent we leave now for his own calculation.

No. 1,473.—**Determination of Melting Points of Fats** (A. J. O.).

Besides other methods heretofore mentioned in our journal, we can recommend the following, which was originally proposed by Dr. Kratschmer, in Vienna, and which answers the purpose admirably.

Introduce the substance to be tested into a narrow, nearly capillary glass-tube, closed at the bottom, and when it has become solidified, introduce a droplet of mercury which will remain on top of the column. At the moment when the congealed fat in the tube becomes liquid, the drop of mercury sinks. The temperature is read off from a thermometer attached to the capillary glass-tube. If desired, the same sample may be repeatedly treated in the tube in the same manner.

No. 1,474.—**Hager's Dyspepsia Pills** (U.).

Hager recommends the following in case of enfeebled digestion, dyspepsia, sour stomach, "Katzenjammer" or "Kater," and other gastric disturbances:

	Gm.	Gr.
Cinchonid. Sulphatis	5.0	75
Pepsini	32.0	480
Zingiberis	2.0	30
Pimentæ	2.0	30
Cardamomi	2.0	30
Gentianæ	12.5	188
Althææ	2.0	30
Tragacanthæ	4.0	60
Glycerini	8.0	120
Acidi Hydrochlorici (25%)	10.0	150
Aquæ destillatæ	6.0	90

Mix intimately and make into 480 pills. Expose them to the air for one day, then coat them with sugar or other material.

Four or five of these pills may be taken during or after a meal. When the stomach rejects food, after excessive use of alcohol, 2-3 pills may be taken every hour during 12 hours. In "Katzenjammer" 5 pills may be taken every half hour during 5 or 6 hours.

No. 1,475.—**German Receptology** (Subscriber).

This correspondent wants to have pointed out to him some work, from which he may learn the methods by which German physicians prescribe, and also the directions, phrases, terms and signs used by them.

There are many such books, in fact, it is difficult to choose. We will quote two, one being small and rather elementary, viz.:

Knebusch, Theod., "Die allgemeine und specielle Receptirkunde," 8vo, Stuttgart, 1879, *mark* 1.60. And the other being the most complete we are acquainted with, and of the greatest use both to the physician and the pharmacist:

Bernatzik, W., "Handbuch der allgemeinen und speciellen Arzneiverordnungslehre." Vol. I. Receptirkunde. (With illustrations). 8vo Wien, 2d edition, about 12 *marks*.)

No. 1,476. — **Artificial Fruit-Essences** (K. S).

Here are the desired formulæ:

1. *Strawberry.*

	Parts.
Ethyl butyrate	5
" acetate	5
" formate	1
Methyl salicylate	1
Amyl acetate	3
" butyrate	2
Ethyl nitrate	1
Alcohol	100

The Doctor and the Professor met in the woods, where the former was evidently gunning, and the latter, seeing a red deer bounding off in the distance, cried: "There! there he goes! Why don't you fire?" "Oh, no!" said the Doctor. "He is like my single patient. I get all my practice out of him. It would never do to kill him."—*Fliegende Blätter.*

Mix and distil from a glass-retort or flask, into which about ¼ part of calcined magnesia has been introduced. The first 10 and the last 10 portions should be received separately, and the intermediate portion should be rectified from fresh strawberries in a copper still, after having been in contact with them for 24 hours. When nearly all has passed over, the reserved portions may be added and also rectified. They yield an inferior product.

2. *Raspberry.*

	Parts.
Ethyl formate	1
" butyrate	1
" benzoate	1
" acetate	1
" œnanthate	1
" sebacate	1
Methyl salicylate	1
Amyl acetate	1
" butyrate	1
Saturated alcholic solutions of Tartaric acid	5
Succinic acid	1
Alcohol	100

Mix well, and rectify from a glass-retort or flask containing about ¼ part of calcined magnesia. The first 10 and last 10 parts are set aside, and the middle portion is rectified in a copper still from fresh raspberries, having allowed the latter to remain in contact with the liquid for 24 hours. The reserved portions may then be rectified in the same way, but they do not yield so agreeable a product.

No. 1,477. — **Iodohydrargyrate of Potassium** (M.).

The true iodohydrargyrate is a salt containing one molecule of iodide of potassium, 2 molecules of mercuric iodide, and 3 molecules of water.

$$2\,KI\;2\,HgI_2\;3\,H_2O$$

This may be prepared by adding to a concentrated boiling solution of 2 mol. of iodide of potassium, 3 mol. of the mercuric iodide. On cooling, long yellow prisms of the before-mentioned salt crystallize out. When heated, the crystals at first give off water, and afterwards melt to a red liquid. The salt is soluble in alcohol and ether. When treated in water, one-half of the mercuric iodide separates, and on evaporating the solution a salt is left which consists of 2 KI HgI_2; dilute acids separate the mercuric iodide from the crystals.

No. 1,478.—**Bretonneau's Pills** (Dr. S.).

These are tonic pills containing iron, quinine, stomachics, and gentle laxatives. The formula is:

		Gm.	Gr.
℞	Ferri Reducti	8.0	120
	Quininæ Sulphatis	0.5	8
	Zingiberis	0.5	8
	Extr. Cinchonæ	1.5	24
	Ext. Rhei [comp.]	1.5	24
	Aloes	0.25	4

M. Make 50 pills. One to four per day.

No. 1,479.—**Restoring Rancid Olive Oil** (Selma).

The following process is suggested by Hager:

Shake the oil thoroughly with 1 per cent of chloride of sodium, 1 per cent of water, and ½ per cent of calcined magnesia, previously mixed together. Then allow to settle, decant after one week, and filter the turbid residue. The mixture should be in a well closed vessel, and be kept in the dark during settling. If the rancid odor has not disappeared after this treatment, add 2 per cent, by volume, of absolute alcohol, shake thoroughly, let stand 24 hours, then heat on a water bath until the alcohol is evaporated, and filter. If the rancid odor still remains, the case is most likely a hopeless one. The alcohol forms, with the rancid constituents of the oil, certain compounds allied to fruit-ethers, which have an agreeable odor and are either dissipated when the oil boils or remains behind, owing to their high boiling point.

W. E. H., of Michigan. Please to send us your name as well as your initials and we will be able to reply to yours of March 7th.

Formulæ Asked For.

1. Kennedy's Salt Rheum Ointment.
2. Williams' Indian Pile Ointment.
3. Blair's Rheumatic Pills.
4. Elleman's Embrocation for Man and Beast (made in England).
5. Crossman's Specific Mixture.
6. Barrell's Indian Liniment.
7. Hamlin's Wizard Oil.

Lactate of Quinine.—Vigier (*Gaz. Hebdom.*) says that this is preferable to any other salt for hypodermic use owing to its solubility and neutral character. He recommends, for this purpose, a solution of fifteen grains in six drachms of glycerin and twenty drachms of water, of which about seventy-five minims should be injected three or four times daily.

Iron Alum (Sulphate of Iron and ammonium), given in powder and combined with opium, is said by Dr. E. T. Williams to be a good remedy for diarrhœa attended with ulceration. Children of one year may take a grain of the alum and one-twelfth of a grain of powdered opium for a dose.—*Boston Med. and Surg. Jour.*